

**China's Military Modernization And Its Impact On The United States  
And The Asia-Pacific**

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**HEARING**

BEFORE THE

U.S.-CHINA ECONOMIC AND SECURITY  
REVIEW COMMISSION

**ONE HUNDRED TENTH CONGRESS**

FIRST SESSION

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MARCH 29-30, 2007  
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May 30, 2007

The Honorable ROBERT BYRD

*President Pro Tempore of the Senate, Washington, D.C. 20510*

The Honorable NANCY PELOSI

*Speaker of the House of Representatives, Washington, D.C. 20515*

DEAR SENATOR BYRD AND SPEAKER PELOSI:

We are pleased to transmit the record of our March 29-30, 2007 hearing on “*China's Military Modernization and Its Impact on the United States and the Asia-Pacific.*” The Floyd D. Spence National Defense Authorization Act (amended by Pub. L. No. 109-108, sect. 635(a)) provides the basis for our hearing, as it requires the Commission to study China’s military modernization. During the hearing, the Commission heard from Representatives Dana Rohrabacher, Madeleine Bordallo, and Tim Ryan, and received a written statement from Representative Duncan Hunter. The Commission also heard the views of senior defense and intelligence officials, including the Commander of the U.S. Strategic Command, General James Cartwright, and DIA Senior Intelligence Analyst Mark Cozad. An array of notable experts from outside the U.S. government also participated in the hearing.<sup>1</sup>

The hearing was timely, coming only three months after a successful direct-ascent anti-satellite test by China that destroyed one of its own aging weather satellites in low-earth orbit. This test was only the third of its kind by any nation in history and served as a useful reference point during the hearing to illustrate not only China’s advances in military capabilities, but also the extent to which China’s decision making process is still very much opaque. This incident raises questions about Chinese intentions in space. The Commission will address these questions as it continues to monitor developments.

The Commission took a novel approach to this hearing on China’s military modernization, its first on this topic in 2007. Using the threat scenarios outlined in the Department of Defense’s 2006 Quadrennial Defense Review (QDR) as its analytical framework, the Commission examined China’s capacity to threaten the United States and its allies in the domains of irregular warfare, traditional warfare, and disruptive warfare. This approach generated testimony that illuminated many important aspects of China’s military strategy and modernization programs, including the heavy emphasis China has placed on asymmetric strategies and capabilities.

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<sup>1</sup> An electronic copy of the full hearing record is posted to the Commission’s web site:  
<http://www.uscc.gov/hearings/hearingarchive.php#hearings2007>

## *China's Capacity for Irregular Warfare*

Several experts testified that if China were to find itself in an armed conflict with the United States and its allies such as that resulting from a Taiwan dispute, China is likely to employ an array of irregular warfare strategies against its adversaries. According to Michael Vickers, Senior Vice President for Strategic Studies at the Center for Strategic and Budgetary Assessments, a Chinese attack on Taiwan could entail special operations and cyber attacks on U.S. regional bases in Japan and South Korea, and might even include cyber attacks on the U.S. homeland that target the U.S. financial, economic, energy, and communications infrastructure.

China's search for asymmetric capabilities to leverage against U.S. vulnerabilities represents a serious form of irregular warfare preparation. China is convinced that, financially and technologically, it cannot defeat the United States in a traditional force-on-force match up. However, as Chairman of the Defense Science Board Dr. William Schneider highlighted, if it can acquire niche weapons systems that are relatively inexpensive and that can exploit U.S. vulnerabilities, it stands a chance of deterring or defeating the United States in a limited engagement. This strategy explains China's emphasis on acquiring sophisticated ballistic and cruise missiles, submarines, mines, and information and electronic warfare capabilities.

According to Dr. Derek Reveron, Professor at the U.S. Naval War College, Beijing also engages in a much softer form of irregular warfare through its perception management operations, both in times of tranquil relations and in times of crisis. Perception management is not unique to China – all nations have similar international perception goals. However, because the Chinese Communist Party maintains tight political and media controls, Chinese perception management campaigns are more tightly coordinated with diplomacy.

China has worked diligently over the last two decades, as Dr. Reveron stated, “to promote a non-aggressive image of itself through a policy of non-interference, outreach to foreign publics and governments through public works projects, participation in the international system, and comparisons to the United States, which it characterizes as a hegemon on the offensive.” This is in keeping with an internal and foreign policy statement made in 1991 by Party Chairman Deng Xiaoping when he put forward that China should, “Observe calmly; secure our position; cope with affairs calmly; hide our capacities and bide our time; be good at maintaining a low profile; never claim leadership.”

Similarly, Dr. Reveron noted that in times of crisis China has sought to manipulate information in order to cast itself in a positive light or as the victim of U.S. aggression. He illustrated his point by recounting China's response to the crisis that ensued when a Chinese fighter collided with a U.S. EP-3 reconnaissance aircraft in international airspace in April 2001. The damaged EP-3 was forced to land on China's Hainan Island. By holding the crew in isolation for the first three days and monopolizing information, by characterizing the EP-3 as a spy plane, and by charging that the U.S. had violated China's sovereignty by landing the aircraft on Hainan Island, Chinese leaders were able to portray

the United States as the aggressor in the crisis and elicit a statement of regret for the loss of the Chinese pilot.

### **China's Traditional Warfare Capabilities**

Western literature on Chinese military modernization, as well as Chinese national defense white papers, acknowledges that China is presently in the midst of a lengthy round of holistic military modernization begun in 1992 with the aim of creating a professional, high-technology fighting force equal to those of the world's best militaries. To this end it has raised its defense budget 10 percent or more each year over the last 11 years. This March, Beijing announced that its 2007 defense budget would rise by 17.8 percent to total \$44.94 billion. The Pentagon believes this figure is significantly understated and that China's actual defense budget is closer to two or three times this amount, or \$90-\$135 billion. Because of the opacity of Beijing's expenditures, particularly those that are military-related, it is difficult for analysts to agree on precise amounts. Nonetheless, the increasingly sophisticated capabilities purchased with such expenditures are readily demonstrated. In his testimony, Defense Science Board Chairman Schneider illustrated the benefit of looking at capabilities rather than budgets by saying, "I think looking at it from an output perspective may in some ways be more informative than trying to calculate how the inputs are measured." Therefore, while larger defense budgets do not necessarily reflect an increase in capabilities, in the case of Beijing's funding of the PLA there is a strong correlation in this regard.

According to the testimony of LTC (Ret.) Cortez Cooper of Science Applications International Corporation, China's weapons acquisitions and training are guided by an overall strategy of preparation to win "informationized wars" – or wars that are heavily reliant on computers and information systems. He also noted that Beijing's strategists believe that, in the future, conflicts that involve China will be limited in geographical scope, duration, and political objectives, and will be highly dependent upon command, control, communications, and computer (C4) systems.

As China surveys scenarios of potential future conflict, one of the most likely is a conflict over Taiwan in which the United States and/or Japan might intervene. This understanding has guided China's financial investment in the military over the last 15 years, during which the majority of the resources for weapons acquisition has gone to the Navy and Air Force rather than the land forces. Nonetheless, the pattern of military modernization and acquisition by China suggests the possibility it is consciously preparing for other types of and locations for armed conflict (or efforts to deter conflict with shows of force).

### **Navy**

The PLA continues to modernize its Navy with an emphasis on those platforms that are best suited for littoral or "green water" operations. China has completed the acquisition of its fleet of a dozen Kilo-class submarines from Russia along with a complement of advanced SS-N-27 "Sizzler" supersonic anti-ship missiles. These low altitude sea-skimming missiles were specifically designed for attacking U.S. aircraft carriers by defeating the Aegis anti-missile system. Simultaneously, it is launching ever-larger

numbers of indigenously developed Song and Yuan-class submarines, the latter of which may be equipped with an air-independent propulsion system for improved endurance.

The PLA Navy surface fleet has also made substantial progress in raising its air defense and surface warfare capabilities. Its three newest classes of surface combatants, the Luyang II and Luzhou-class destroyers and Jiangkai II-class frigate, are all equipped with sophisticated air search and missile guidance radars and long-range, vertical launch, surface-to-air missiles. However, the anti-submarine warfare capabilities of these vessels are weak – as was the case with their predecessors.

In the assessment of Dr. Andrew Erickson, Professor at the U.S. Naval War College, naval power projection remains lower on the PLA Navy's list of priorities than littoral operations in the near term. Despite their latent production capacity, China's shipyards have not engaged in the serial production of replenishment-at-sea ships, considered essential for the re-supply of surface action groups engaged in blue water operations. Similarly, even though China has benefited from close to two decades of aircraft carrier design study, it still has not produced a single operational carrier platform. However, there are indications that the PLA Navy soon may refurbish the Russian carrier Varyag that it acquired from Ukraine and place it in an operational state.

If China launches ten of its new nuclear-powered Shang-class submarines by the end of 2008, as posited by Mr. Cooper, this would reflect a new emphasis on blue water naval capabilities on the part of Chinese strategists. In fact, so substantial have been Chinese advancements in naval modernization that they are leading some to begin to consider China as a partner, along with the U.S. Navy, in protecting freedom of navigation and maritime security on the high seas. During the hearing, RADM (Retired) Eric McVadon, former U.S. Defense Attaché in Beijing, suggested that, "[i]t is reasonable to envision the PLA Navy as part of our thousand ship navy concept, described by the U.S. Chief of Naval Operations as an international fleet of like-minded nations participating in security operations around the world. U.S. policies can foster, if not ensure, a favorable outcome." There may be problems in building such a partnership with China, however. Among those is the fact that, according to section 1203 of the National Defense Authorization Act for Fiscal Year 2000, the U. S. Navy likely would not be permitted to engage in the forms of operational information sharing with the PLA that would be required for such military-to-military collaboration.

### Air Force

China has always considered air superiority over the Strait as a necessary precondition to successful invasion and to this end has funded the PLA Air Force heavily over the last 15 years. In the early 1990s, China abandoned its hope of building an advanced fleet of fighter aircraft through only indigenous means and instituted a two track system of acquiring advanced types from abroad while continuing to pursue parallel domestic programs. Today, the PLA Air Force possesses close to 300 of the Russian Sukhoi family of aircraft, including fourth generation, imported Su-27 and Su-30s, and licensed, co-produced Su-27s, designated the "J-11." It is also manufacturing its first indigenous, light-weight, fourth-generation fighter, the J-10, in increasing numbers.

China continues to rely primarily on foreign purchases to fulfill its requirements for strategic lift and aerial refueling. The IL-78 still serves as the mainstay for PLA Air Force aerial refueling, though it has been supplemented by H-6 bombers reconfigured for this purpose. According to Mr. Cooper, China recently agreed on a deal to purchase additional IL-76 transport aircraft that would increase its lift capacity for airborne forces by as much as 150 percent.

As evidenced by its modernization trends, the PLA Air Force understands the importance of developing a fleet with information systems that can be integrated into a theater-wide command, control, communications, computer, intelligence, surveillance, and reconnaissance (C4ISR) system. It has sought to install data links in all its advanced fighter aircraft and to build or acquire airborne early warning aircraft. China's handful of Y-8 and KJ-2000 aircraft fulfill this latter requirement to a limited degree. The second of these is China's answer to the United States blocking the \$1 billion deal for China to purchase Israel's "Phalcon" system in 2000. The KJ-2000 system is based on the Russian A-50 airframe and uses an indigenous phased array radar.

### Army

Despite the fact that China's defense budget has favored the Navy and Air Force over the last decade and a half, the modernization of China's ground forces continues to constitute an important component of the overall development of China's armed forces. The Army continues to train in combined arms warfare and to focus on improving the quality of its infantry, armor, and artillery operations. It also conducts joint operations with the Navy and Air Force to train in the types of air mobile and amphibious assault operations that it would be called upon to undertake in a potential conflict over Taiwan. According to Mr. Cooper, about a quarter of the PLA's maneuver divisions and brigades focus on training for amphibious operations at four or more major amphibious training bases.

Even though training across the Army continues to lag behind that of the Navy and Air Force, in recent years the U.S. Defense Department has witnessed significant efforts dedicated to improving the professionalism and effectiveness of all PLA services. These efforts include developing a professional non-commissioned officer corps, improving the professional military education programs for officers, reforming and improving the quality of training, raising the pay of enlisted personnel, and emphasizing integration of information technology in daily operations.

### Second Artillery

Development continues on both the nuclear and conventional components of China's strategic missile forces, otherwise known as the Second Artillery. Presently, China's land-based, solid-fueled, road-mobile DF-31 intercontinental ballistic missile constitutes its sole means of nuclear deterrence. However, with the introduction of the DF-31's naval counterpart, the JL-2, on the Jin-class submarine, China will possess an even more survivable nuclear deterrent.

China's conventional force, consisting of medium and short-range ballistic missiles, constitutes a crucial component of the deterrent force arrayed against Taiwan and is

expected to fulfill an important theater-level precision strike role for China if armed conflict should arise. Presently, the Second Artillery's arsenal of 850 short-range ballistic missiles is being augmented at a rate of roughly 100 missiles per year. Additionally, the lethality of these missiles has increased through the development of more sophisticated warheads.

One other development in China's conventional missile force is noteworthy. The Second Artillery is designing a variant of the DF-21 intermediate-range ballistic missile with a maneuverable reentry vehicle (MaRV). This weapon will be very difficult to defend against due to its extremely high terminal speed. According to Mr. McVadon, if this capability is achieved, U.S. carrier groups responding to a Taiwan crisis may need to operate much further from China's coast, increasing the difficulty of air operations over the Strait.

### The Taiwan Strait

Contingencies involving Taiwan remain the focus of Chinese planning and force acquisitions in the near term. The goals of PLA strategists are to deter Taiwan from declaring independence and to deter or delay the arrival of intervening third party forces, such as those of the United States or Japan. According to Dr. Bernard Cole, professor at the National War College, while Taiwan's armed forces are arguably better trained than their mainland counterparts, they also are under-armed in every service. Cole emphasized the importance of this by noting that if armed conflict were to break out between the two, it is unlikely that Taiwan could withstand the pressure from the mainland for more than a few weeks. He also remarked that, even with the addition of the defense systems that would be funded by the Special Budget that has been held up in the Legislative Yuan for more than five years, Taiwan's armed forces still would face a significant challenge defending the island. Indeed, it has become the consistent criticism of the United States government over the past decade that Taiwan is not preparing sufficiently for its own defense and is too reliant on the potential intervention of U.S. forces.

Chinese strategists are well-aware of the historical precedent of U.S. armed intervention on behalf of Taiwan and are developing strategies and capabilities to deter or delay the arrival of such forces in the theater. Chinese doctrine in this area stresses the use of pre-emptive, decisive strikes on forward bases and staging areas, such as Guam and Okinawa, and employment of a variety of platforms to deny the operational use of the waters in the Chinese littoral. Presently, the PLA possesses the capabilities to maintain sea denial operations out to 400 miles from China's coastline for a period of days. By 2010 China is expected to be able to sustain such operations for a period of weeks.

### *China's Capabilities to Execute Disruptive Warfare*

Disruptive warfare is a form of non-traditional warfare with the aim of undermining the qualitative advantages of an opponent. Usually, fielding these asymmetric capabilities does not involve as much research and development or fiscal investment as traditional capabilities. Thus, developing disruptive capabilities is a strategic choice for a nation with a nascent military force preparing for conflict with a comparatively advanced adversary.

As evidenced by the trajectory of its military modernization, Chinese defense planners are seeking to accomplish the goal of undermining the U.S. military's technological edge through a variety of disruptive means. Among these is cyber warfare. USSTRATCOM Commander General Cartwright testified before the Commission that China is actively engaging in cyber reconnaissance by probing the computer networks of U.S. government agencies as well as private companies. The data collected from these computer reconnaissance campaigns can be used for myriad purposes, including identifying weak points in the networks, understanding how leaders in the United States think, discovering the communication patterns of American government agencies and private companies, and attaining valuable information stored throughout the networks. General Cartwright testified that this information is akin to that which in times past had to be gathered by human intelligence over a much longer period of time. He went on to say that in today's information environment, the exfiltration that once took years can be accomplished in a matter of minutes in one download session.

Speaking of the magnitude of the damage cyber attacks could cause, General Cartwright said, "I think that we should start to consider that regret factors associated with a cyber attack could, in fact, be in the magnitude of a weapon of mass destruction." Here, by "regret factors," General Cartwright was referring to the psychological effects that would be generated by the sense of disruption and chaos caused by a cyber attack.

One subsequent panelist posited a mitigating analysis. James Lewis from the Center for Strategic and International Studies testified that asymmetric attacks, including cyber attacks, are more likely to solidify the resistance of the targeted population than to cause real damage. Speaking about the practical outcomes of asymmetric attacks, Lewis said, "The effect is usually to solidify resistance, to encourage people to continue the fight, and if you haven't actually badly damaged their abilities to continue to fight, all you've done is annoy them, and what many of us call cyber attacks [are] not weapons of mass destruction but weapons of mass annoyance." Despite the different estimates of potential damage from cyber attacks, all the panelists agreed that developing asymmetric capabilities is a primary focus of the PLA's military modernization endeavor.

This modernization also includes efforts to build competitive space and counter-space capabilities, the latter demonstrated by the January 2007 anti-satellite test. According to Hudson Institute Research Fellow Mary FitzGerald, Chinese military strategists and aerospace scientists have been "quietly designing a blueprint for achieving space dominance" for more than a decade.

### **Recommendations**

Based on the information presented at the hearing, we offer the following four preliminary recommendations to the Congress:

- 1) In order to minimize the possibility of miscalculation and conflict, the Commission recommends that Congress urge the Administration to press Beijing to engage in a series of measures that would provide more information

about its strategic intentions and the ultimate purpose of its increasing military expenditures.

- 2) To further facilitate mutual understanding and avoid conflict resulting from inaccurate perceptions of interests or values by either nation, and to establish relationships that could prove critical for de-escalation of crises, the Commission recommends that Congress call on the Defense Department to develop a strategic dialogue whereby the senior military staff from the United States and China can discuss potentially contentious issues of the day such as non-interference in other nations' satellite activity and protocol for the use of nuclear weapons.
- 3) The Commission recommends that Congress ensure the adequate funding of military and intelligence agency programs that monitor and protect critical American computer networks and sensitive information.
- 4) The Commission recommends that Congress give high priority to the support of American space programs that ensure continued freedom of access to space and the safety of space-based commercial and defense-related assets. This would include hardening satellites, maintaining quick-launch replacement satellites, and other defensive measures called for by the Operational Responsive Space framework.

The transcript, witness statements, and supporting documents for this hearing can be found on the Commission's website at [www.uscc.gov](http://www.uscc.gov). We hope these will be helpful as the Congress continues its assessment of China's military modernization.

Sincerely yours,



Carolyn Bartholomew  
*Chairman*



Daniel Blumenthal  
*Vice Chairman*

cc: Members of Congress and Congressional staff

May 30, 2007

The Honorable ROBERT C. BYRD

*President Pro Tempore of the Senate, Washington, D.C. 20510*

The Honorable NANCY PELOSI

*Speaker of the House of Representatives, Washington, D.C. 20515*

DEAR SENATOR BYRD AND SPEAKER PELOSI:

We are pleased to transmit the record of our February 1-2, 2007 public hearing on “*The U.S.-China Relationship: Economics and Security in Perspective.*” The Floyd D. Spence National Defense Authorization Act (amended by Pub. L. No. 109-108, section 635(a)) provides the basis for this hearing, as it requires the Commission to submit an advisory report to the U.S. Congress on “the national security implications and impact of the bilateral trade and economic relationship between the United States and the People’s Republic of China.” In this hearing, the Commission reviewed the overall status of the U.S.-China relationship, and evaluated both the progress that has been made since China’s accession to the World Trade Organization (WTO) in 2001 and the emerging challenges still facing U.S.-China relations.

The testimony offered at the hearing highlighted views that the United States needs to develop a coherent, coordinated policy toward the People’s Republic of China that integrates economic, security, diplomatic, and human rights concerns. Deputy Under Secretary of Defense for Asian and Pacific Security Affairs Richard Lawless testified, “China’s rapid emergence is an important element of today’s strategic environment, of course, one that has significant implications for the United States, the Asia Pacific region, and the world. The uncertainty surrounding China’s rise underscores the importance of the Commission’s charter to identify approaches that best serve U.S. interests in managing the way forward.” Development of a more coordinated framework for approaching China would strengthen the ability of the United States to communicate its interests to China and how it believes China must act to assume a place on the world stage as a mature, responsible world power.

Developing a more coordinated approach will require reexamining the expectations fundamental to the U.S.-China relationship and encouraging a public dialogue among U.S. commercial, security, and diplomatic interests intended to identify conflicts in American behavior toward China, and identification of policy solutions that best serve the economic and security interests of the United States and our people. James Mann, FPI Author-in-Residence at the School for Advanced International Studies at Johns Hopkins University, testified that “[U.S.] policy and public discourse about China are often affected by ideas, assumptions, rationalizations, and phrases that we fail to examine.”

In addition to the economic benefits of expanded trade, the granting of Permanent Normal Trading Relationship (PNTR) status for China six years ago was linked to the social and political belief that economic liberalization inevitably would lead China toward democratic political reforms. However, as Mr. Mann argued, the United States

has not considered fully the possibility that China may not undergo dramatic political change as a result of its economic development and that leadership by the Chinese Communist Party may remain intact. As December 2006 marked the completion of the fifth year after China's accession into the WTO, the United States should review its economic relationship with China and assess the extent to which all the Congress's expectations when it approved PNTR status for China have or have not been realized.

### **The U.S.-China Economic and Trade Relationship**

China's policies of market liberalization have resulted in rapid export-led economic growth prompting increased foreign investment; development of China's manufacturing capabilities; and integration into the global supply chain. China's abundant and inexpensive labor supply has made that country an obvious place for multinational companies to expand their production. However, as Dr. Peter Navarro, Professor of Business at the University of California, Irvine, observed in his testimony, five of eight factors identified as major drivers of China's comparative advantage—i.e., its ability to undercut the prices of global competitors—are considered unfair trading practices. These include its undervalued currency, counterfeiting and piracy, export industry subsidies, and lax health, safety, and environmental regulations. These practices violate China's WTO commitments, especially regarding workers' rights, market access, currency manipulation, subsidies, and the protection of intellectual property rights. These violations and unfair practices also contribute to a growing U.S. trade deficit with China, one that U.S. Census Bureau statistics confirm increased 177 percent in the past six years from \$83.8 billion in 2000 to \$232.5 billion in 2006.

Former Under Secretary of Commerce for International Trade Grant Aldonas argued that, as a result of changes in technology, transportation costs, and communication, China is no longer a low-cost producer, but the country maintains its attractiveness as a location for foreign direct investment because of the massive distortions produced by Beijing's economic policies. These distortions diminish the competitiveness of American workers, benefits, and wages, and as Ms. Thea Lee, Policy Director of the AFL-CIO, testified, even the prospect that American workers will be able to participate in effective collective bargaining as members of unions. Manufacturers increasingly are looking to China for its lower labor costs, and one significant factor is that the Chinese government prevents workers from organizing and negotiating for their wages, benefits, and rights. Dr. Navarro argued that as more American companies offshore their production to China, the American business community will lose its political will to lobby the government against unfair trading practices. It will be increasingly in the interest of businesses operating in China to maintain status quo distortions in order to protect their investments, but, as Mr. Aldonas stated, this is not necessarily in the interest of the United States.

All witnesses agreed that currency reform alone is not the solution to rebalancing the U.S.-China relationship because the deficit and disadvantages are compounded by China's other unfair trading practices. Dr. Navarro noted that revaluation would not produce a one-for-one improvement in the ability of the United States to compete with

the China Price.<sup>1</sup> Rather, coordinated actions in the WTO against unfair industrial subsidies and restrictions on workers' rights are required to produce a comprehensive reshaping of the U.S.-China trade balance and to induce China's greater compliance with its WTO obligations.

### **The U.S.-China Military and Security Relationship**

On January 11, 2007 China fired an anti-satellite weapon at one of its own weather satellites, destroying the satellite and littering space with debris. Deputy Under Secretary Lawless stated that this test and other actions by the Chinese in the past six years illustrate a "more confident and increasingly assertive posture than when the U.S.-China Commission was established in 2000." China increasingly is investing in capabilities designed to thwart U.S. access to the region. Of concern, China's ultimate objectives for its military modernization and assertiveness remain unclear.

Dr. Thomas Ehrhard, Senior Analyst at the Center for Strategic and Budgetary Assessments, testified that the U.S. must actively maintain the existing military balance in Asia. Improvement of China's capabilities requires a combined U.S. strategy of creating a flexible base structure, maintaining long-range forces, and supporting stealthy submarine and aircraft systems. Dr. Ehrhard stated, "Many key measures in the military balance vis-à-vis China are moving in a negative direction from a U.S. point of view, especially in the Taiwan Strait, and that movement is occurring at a pace that may expose this nation and our allies to more destabilizing Chinese actions in the future, generate capacity for coercion by PRC leaders, and present increasing risk of miscalculation owing to an erosion of deterrence." Deputy Under Secretary Lawless concluded that in the absence of improved transparency and broader trust between the two countries, the risk of miscalculating the development of China's military capabilities would increase. .

Mr. Kenneth Allen, Senior Analyst at the CNA Corporation, testified that the issue of transparency in the U.S.-China relationship should be viewed with a 25-year perspective, and that U.S.-China military-to-military exchanges would benefit from formal agreements pledging prior notification of meeting time and place and topics of discussion. Army Col. Charles Hooper, Senior Lecturer at the School of International Graduate Studies at the Naval Postgraduate School, argued that China does not engage in military-to-military exchanges for the purpose of increasing transparency or reducing threat nor does China share information out of a sense of obligation or reciprocity. Thus, it is unlikely the U.S. military will be able to obtain increased access to and conduct meaningful conversation with the PLA's leadership regardless of its investments in military-to-military exchanges. However, all witnesses underscored the importance of continuing to seek dialogue with the Chinese and monitoring the progress of interactions. Moreover, several witnesses highlighted the need to refocus the education and training of

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<sup>1</sup> According to Dr. Navarro, "The China Price refers to the fact that Chinese manufacturers can undercut significantly the prices offered by foreign competitors over a mind-bogglingly wide range of products and services. Today, as a result of the China Price, China produces more than 70% of the worlds DVDs and toys; more than half of its bikes, cameras, shoes, and telephones; and more than a third of its air conditioners, color TVs, computer monitors, luggage and microwave ovens." *The Coming China Wars*, New York: FT Press, 2007), p. 2.

U.S. military personnel to incorporate more study of China because of the possibility it may choose a course that will make it an adversary of the United States.

Additionally, creating a new framework for military-to-military exchanges—such as engaging our allies in the region and throughout the world on the subject of the PLA’s modernization or engaging the PLA in security dialogues about third parties or on issues of humanitarian assistance and disaster response—could produce new insight into PLA strategic thought and intention.

### ***The U.S.-China Political and Diplomatic Relationship***

Since China’s accession to the WTO, U.S.-China relations have grown increasingly complex as the United States has sought to balance trade promotion with concerns over China’s behavior regarding proliferation, support of rogue governments, and military developments, especially regarding the Taiwan Strait. Acting Deputy Assistant Secretary of State for East Asian and Pacific Affairs John Norris testified, “Our vision is a China that is more open, transparent, and democratic, and a China that will join us in actions that strengthen and support a global system that has provided peace, security, and prosperity to America, China, and the rest of the world. Encouraging China to move in that direction continues to be the foundation of our policy; the question...is how we can most effectively do that.” He noted that while it is encouraging China to choose the path of a mature, responsible stakeholder in the global system, the United States is aware of the possibility that China will not choose this course.

To facilitate the expression of U.S. interests and policy to China, the United States and China have instituted structural mechanisms for diplomatic engagement, such as the Senior Dialogue and the Strategic Economic Dialogue. However, while witnesses agreed that engagement, dialogue, and cooperation with China are needed to improve issues of transparency and governance, Dr. Edward Friedman, Hawkins Chair Professor of Political Science at the University of Wisconsin and Dr. Alan Wachman, Professor of International Politics at The Fletcher School at Tufts University, underscoring James Mann’s point, both highlighted the need to reevaluate how that engagement occurs and whether U.S. expectations and assumptions are, in fact, correct that economic growth in China will lead to political reform.

Witnesses noted throughout the hearing that energy holds immense potential for improved U.S.-China cooperation. Deputy Assistant Secretary of Energy for International Energy Cooperation David Pumphrey testified, “As the two largest energy consumers in the world, the United States and China have a common interest in working together both bilaterally and multilaterally to promote global energy security and a cleaner energy future.” The Department of Energy has actively engaged China on a range of energy issues, including fossil energy, energy efficiency, renewable energy, nuclear energy, and nonproliferation. Moreover, it has worked to incorporate China in dialogue and association with the International Energy Agency, especially as China continues to develop its strategic petroleum reserve.

To improve the depth of U.S.-China cooperation and to improve regional security, given the close relationships the United States maintains in East Asia, Dr. Friedman argued that China must change its diplomatic policies regarding three key regional issues: territorial disputes in the South China Sea and China's relationship with Southeast Asia; territorial disputes in the East China Sea and China's relationship with Japan; and policies toward the people of Taiwan. Moreover, Acting Deputy Assistant Secretary of State Norris acknowledged the importance of involving the diplomatic community in addressing China's recent ASAT test, and suggested the possibility of initiating a dialogue between the Department of State and the Chinese Ministry of Foreign Affairs about the importance of verification in testing of space objects and fair warning, as prescribed by the Outer Space Treaty to which China has acceded but which it has not ratified. Resolution of these issues not only will foster China's reputation as a responsible regional partner, but also will strengthen U.S.-China dialogue by lessening tensions with U.S. allies and allowing engagement to focus on issues of mutual interest.

Despite the areas of potential conflict in U.S.-China diplomacy, Acting Deputy Assistant Secretary Norris and Dr. Shiping Hua, Senior Fellow at the McConnell Center and Professor at the University of Louisville, both agreed that it is in China's interest to play a constructive role in the East Asian region and even globally. Dr. Hua testified that Chinese leaders recognize this and, after three decades of engagement between the United States and China, they realize that constructive engagement with the United States is in China's interest. Acting Deputy Assistant Secretary Norris said, "We must continue to build on the foundations of cooperation that we have established, broadening them and deepening them, while engaging China in a frank and direct manner about those areas in which we believe China's policy or behavior is undercutting our common objectives of peace, security, and prosperity in the region and the world." As expressed by witnesses throughout the hearing, these undercutting policies occur in both the economic and security realm, and the United States needs to design its diplomatic approaches to China so that it pursues American interests in a coordinated way in all three realms of interaction: economic, security, and political.

## **Recommendations**

1. Because understanding China's strategic intentions—both in the economic and security realms—is essential to formulating a responsible and proactive policy toward China that addresses the complexity of U.S. interests and avoids miscalculation and potential conflict, the Commission recommends that Congress take all possible opportunities in parliamentary exchange settings to urge officials of the People's Republic of China to be as forthcoming as possible with the United States and other nations in clearly describing its strategic intent and objectives, and to make prior announcement of significant and possibly controversial actions such as the recent anti-satellite test in order to reduce the potential for miscalculation and prevent the development of anxieties that swell into adversarial inclinations.

2. The Commission recommends that Congress instruct the Administration to reevaluate its assessment of China's currency policies in the Department of Treasury's Annual Report to Congress.
3. The Commission recommends that Congress both applaud the recent actions taken by the Administration to employ WTO mechanisms to seek relief from China's unfair trading practices, and urge the Administration to act more rapidly to employ those mechanisms in future circumstances where China fails to rectify other unfair trading practices.
4. The Commission recommends that Congress direct the Administration to determine the nature of past military-to-military exchanges with China that appear to have produced the greatest enhancement in the U.S.-China relationship and benefits for the United States, to seek agreement from China to expand the frequency and number of exchanges determined to be mutually productive; and to seek a formal agreement from China providing that there will be an exchange of the specific details, agenda, list of participants, and topics for discussion for each military-to-military exchange circulated to all participants at least several weeks in advance of the exchanges.
5. The Commission recommends that Congress urge the Department of Defense to expand its dialogue with the militaries of other nations in the Asia Pacific region about the effects of China's military modernization, actions, and objectives on the regional balance of power, with the purpose of strengthening U.S. partnerships in the region.
6. The Commission recommends that Congress instruct the Administration to create an interagency committee on China to coordinate the formulation and execution of U.S.-China policy, and to facilitate development of a comprehensive U.S. Government policy toward China that incorporates economic, security, and diplomatic considerations and objectives.

The transcript, witness statements, and supporting documents for this hearing can be found on the Commission's website at [www.uscc.gov](http://www.uscc.gov). We hope these will be helpful as the Congress continues its assessment of U.S.-China relations.

Sincerely yours,



Carolyn Bartholomew  
*Chairman*



Daniel Blumenthal  
*Vice Chairman*

cc: Members of Congress and Congressional Staff

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**CHINA'S MILITARY MODERNIZATION  
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**THURSDAY, MARCH 29, 2007**

U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION  
*Washington, D.C.*

The Commission met in Room 562, Dirksen Senate Office Building, Washington, D.C. at 9:00 a.m., Chairman Carolyn Bartholomew, Vice Chairman Daniel Blumenthal, and Commissioners William A. Reinsch and Larry M. Wortzel (Hearing Cochairs), presiding.

**OPENING STATEMENT OF CHAIRMAN CAROLYN  
BARTHOLOMEW**

CHAIRMAN BARTHOLOMEW: Good morning. We're going to go ahead and get started with our opening statements, and then we'll break if we're going on when Congresswoman Bordallo comes. I am pleased to welcome everyone to the second hearing of the U.S.-China Economic and Security Review Commission's 2007 reporting cycle. We're very pleased that you could join us today.

I am thrilled to welcome our two newest commissioners, Dennis Shea and Mark Esper, who joined us last week and the week before, respectively. We're very pleased to have them on board. We're looking forward to their participation, and we really are expecting great contributions from them to the work of the Commission.

At today's hearing, we will be exploring the rapid modernization of the Chinese military, the People's Liberation Army. We will be assessing the implications of the military buildup and the impact that it is having on the security of the United States and the stability of the Asia-Pacific region.

The cochairs of our hearing will be Commissioners Larry Wortzel and Bill Reinsch. We are very pleased to hear this morning from several members of Congress. We've got a few statements that

are going to be submitted for the record by several senators. All of these will assist the Commission in understanding the perspective of members of Congress on these issues and also on a consideration of the priorities of the 110th Congress in addressing U.S.-China relations.

Later today and tomorrow, we will hear from key officials from executive branch agencies. And I'm very honored that General James Cartwright who serves as the Commander of the U.S. Strategic Command will be joining us. He's commander of one of our military's four functional Combatant Commands.

We will also receive testimony from Mark Cozad, a Senior Intelligence Analyst at the Defense Intelligence Agency, and testimony from experts from the private sector and academia who will contribute their views and insights regarding the issues to be addressed.

I would now like to turn the microphone over to the Commission's Vice Chairman Dan Blumenthal for his opening remarks.

#### **OPENING STATEMENT OF VICE CHAIRMAN DANIEL BLUMENTHAL**

VICE CHAIRMAN BLUMENTHAL: Thank you very much, Chairwoman Bartholomew. And I'd like to second your comments and acknowledge our newest commissioners, Dennis and Mark. We're very, very happy to have you on board and very much look forward to the contributions you will undoubtedly make.

As the chairman mentioned, today our focus is on China's military modernization and specifically its increasing capacity to wage both irregular and traditional forms of warfare and effects of this modernization on the military balance across the Taiwan Strait.

In our 2006 report we found that China's extensive military modernization program includes acquiring equipment that will allow it to project force further into the Pacific Ocean as well as into the Indian Ocean, and to confront U.S. and allied forces in the region if it concludes its interests require such confrontation.

Today, we'll hear from a variety of experts about these three facets of the modernization program and how the resulting capabilities are presently being employed or could potentially be employed in the future.

I want to recognize Commissioner Larry Wortzel, who was our chairman last year and is one of the cochairs, and Commissioner Bill Reinsch, and thank them very much for assembling this very good and informative hearing.

The witness list is extensive and impressive and I'm confident that the Commission's ability to advise Congress on these matters in the hearing will be substantially enhanced by what we learn here today

and tomorrow.

So, I'll now turn it over to Commissioner Wortzel.

**OPENING STATEMENT OF COMMISSIONER LARRY M.  
WORTZEL, HEARING COCHAIR**

HEARING COCHAIR WORTZEL: Thank you, Madam Chairman, Mr. Vice Chairman. Good morning and welcome. It's always a pleasure to work with Commissioner Reinsch on issues, and we couldn't have done this without his help and the excellent support of our staff.

The purpose of today's hearing is to examine China's military modernization. As we do that, we're using the Department of Defense's 2006 Quadrennial Defense Review, or QDR as it's known, as a framework.

The QDR highlights four vectors or potential types of war scenarios that the Department of Defense envisions as its framework: irregular warfare, catastrophic warfare, traditional warfare, and disruptive warfare.

And of those four vectors, or areas, China falls into three of them. China already employs a number of the softer forms of irregular warfare. It leverages international law to constrain U.S. actions internationally; It conducts perception management operations here in the United States in order to manipulate American and international opinion and to strengthen its position vis-à-vis the United States, and it probes the cyber defenses of important military and economic centers for their vulnerabilities.

In the area of traditional warfare, China has received perhaps the greatest attention by scholars and the media. China's broad-sweeping modernization program begun in 1993 continues to enhance China's capabilities for power projection, for joint operations, for sea and air control and for denial.

China recognizes that Taiwan will only be able to withstand a Chinese blockade or invasion if it's assisted by the United States and its allies. Any strategy must also account for China's heavy investment in submarines, ballistic and cruise missiles, naval strike aircraft, and other systems that not only can be used against Taiwan but can deter or delay the arrival of an intervening force.

If China can keep intervening forces at a distance or render them ineffective for a period of weeks, that may be sufficient for it to achieve its aims.

Those cover some of the panels we'll do today. Tomorrow, Commissioner Reinsch will chair two panels that will address China's

capacity for disrupting American command and control networks and computer systems and China's ambitions in space.

Today, we'll have three congressional witnesses, Congresswoman Madeleine Bordallo, a Delegate from Guam; Congressman Tim Ryan from the 17th District in Ohio; and Congressman Dana Rohrabacher from the 46th District in California.

With that, I'll close, and we'll wait for Congresswoman Bordallo. Thank you very much.

[Whereupon, a short recess was taken.]

## **PANEL I: CONGRESSIONAL PERSPECTIVES**

HEARING COCHAIR WORTZEL: Congressman Tim Ryan, a Democrat from the 17th District of Ohio, will provide his perspective this morning. He's serving his third term in office. He has actively sought to halt China's currency manipulation, and cosponsored the China Currency Act of 2005 and again in 2007 with Congressman Duncan Hunter. Congressman Hunter is not able to be here, but has provided a written statement.

Congressman Ryan was asked to serve on the Democratic Steering and Policy Committee by House Speaker Nancy Pelosi, and he serves on the Appropriations Committee Subcommittee on Labor, Health, Human Services, Education and Related Agencies, and its Subcommittee on Energy and Water Development and Related Agencies.

Congressman, thank you very much for the work you've done. Please begin.

### **STATEMENT OF TIM RYAN A U.S. REPRESENTATIVE FROM THE STATE OF OHIO**

MR. RYAN: Thank you very much. It's always a pleasure to be with you, and I can't even begin to express on behalf of myself and members of my staff what a resource that your body is to us. The level of detail, the level of research that goes into your work, it provides a great service to not only me and my staff, but I think to the whole Congress and to the political system. So I want to thank you very much for that and also welcome my favorite governor, Ms. Bordallo.

I want to thank you for all of your work here at the U.S.-China Economic and Security Review Commission. One of the key issues that we're facing in the country is our dealings with and our relationship to China. This morning, as the Commission begins to explore China's military modernization and discuss the implications for

that region and the world, I don't think there is any question to any of us who have been involved in public life that the People's Republic of China has a military that is growing in its capability seeking to become the dominant force in the region. I don't think there's any doubt that China is using United States dollars to finance this expansion and modernization, and the currency misalignment I believe is to blame.

It is my hope that this Congress will take action on legislation to address this issue and slow China's unsustainable policies and questionable military expansion.

Let me be clear: I believe that a free and fair trade relationship with the People's Republic of China would be greatly beneficial to the citizens of both countries. However, we are not dealing with an open and fair trading partner in China.

The Chinese government provides its industries with a series of subsidies that places U.S. companies at an insurmountable disadvantage. Among the most damaging of China's predatory trade practices is currency misalignment. As the Commission is aware, China's currency misalignment acts as a subsidy on goods, exported to the United States, to the tune of about 40 percent. Here's how it works:

When buying Chinese goods, U.S. importers pay Chinese exporters in U.S. dollars. Then the Chinese sellers must trade in their surplus dollars at roughly 7.8 yuan for each U.S. dollar to the Chinese government.

Because of the enormous trade deficit and foreign direct investment, there is an excess supply of yuan. Without China's currency peg, the yuan would rise in value against the dollar because of its formidable demand and the rapid development of the Chinese economy over the last ten years. If the yuan appreciated in a market-driven manner, it is estimated that the value relative to the dollar would rise by approximately 40 percent.

Because the Chinese do not allow this to happen, it amounts to a 40 percent subsidy. With this appreciation of the yuan, the price of Chinese products would rise, Chinese exports would drop, and exports to China from domestic American companies would then increase.

However, China does not allow this to happen because it would risk disrupting its main strategy of maintaining artificially high economic growth through export-driven development and investment in foreign reserves. As a result of these manipulative strategies, the United States and China share the most imbalanced bilateral trade relationship in the entire world at significant cost to U.S. workers and manufacturers.

All totaled, China alone accounts for nearly \$200 billion or 27 percent of the United States' nearly \$730 billion trade deficit.

To bring this home, let me tell you about a local company called Wheeling PITT in Warren, Ohio. (They also have some operations in western Pennsylvania.) They make tubing, and the competing final product tubing arriving from China costs the same as Wheeling's raw materials. That's the kind of advantage that the products have coming in from China, and that's the kind of disadvantage that a lot of these local companies who employ local workers in the United States, who are family-run businesses, have to compete against.

It wasn't a surprise to many of us that about three weeks ago, Wheeling PITT cut their white collar staff. They've been cutting the blue collar staff, and now have to cut their white collar staff by about 30 percent. So this is the kind of disadvantage that our companies are faced with.

The Chinese conduct this illegal currency misalignment by simply printing money and sterilizing about half of their currency oversupply by issuing bonds and giving subsidies to state-owned companies. To maintain its peg, amid a huge inflow of foreign capital, the Chinese government has amassed over \$600 billion in foreign exchange reserves.

Allowing China to collect massive currency reserves is not only a concern for the U.S. economy, but I think also for our national security, and this is something my partner in this, Duncan Hunter, has been very articulate and passionate about. As Duncan has said, "China is arming itself with weapons it purchased with the dollars earned from its massive trade surplus with the United States."

Further, according to an article dated March 23, 2007, in The Washington Times, China has announced double digit military spending increases each year for the past two decades. The new and advanced weapons systems being purchased by the Chinese military are being financed by the massive reserve in U.S. dollars owned by the Chinese government, mainly as a result of their currency misalignment.

To address these threats to both our economy and our national security, Congressman Hunter and I introduced the Fair Currency Act of 2007, or as it has been commonly been referred to, the Ryan-Hunter bill. Since Congressman Hunter's presidential announcement, it's now the Hunter-Ryan bill, at least in Iowa, Nevada, New Hampshire and South Carolina.

In summary, this bill would allow U.S. industry to use the anti-subsidy, or countervailing duty law, to seek relief from the injury caused by imports that benefit from a subsidy in the form of a foreign exchange rate misalignment. It defines exchange rate misalignment as a foreign government's maintenance of an undervalued currency by means of protracted large-scale intervention in currency markets regardless of the intent of the foreign government.

The bill clarifies that exchange rate misalignment meets all three WTO tests for a prohibited export subsidy: governmental financial contribution, direct benefit and specificity.

Ryan-Hunter gives guidance to the Commerce Department on how to determine whether a countervailable subsidy due to exchange rate misalignment exists and the level of its magnitude. The bill implements the WTO's agreements on subsidies in U.S. domestic law in two ways:

First, by explicitly adding exchange rate misalignment as a countervailable subsidy under U.S. law;

And second, by clarifying that the U.S. countervailing duty law applies fully and equally to subsidies in both market and non-market economies such as China's.

Ryan-Hunter also amends the China-specific safeguard mechanism that will remain in effect until December 13 as part of China's terms of accession to the WTO. The safeguard provides for possible relief from import surges from China that are found to disrupt the U.S. market. Ryan-Hunter instructs the U.S. International Trade Commission (ITC) to evaluate whether exchange rate misalignment exists in determining if market disruption is present in such cases.

If market disruption is found, the president may proclaim increased duties or other import restrictions with China for such period as the president considers necessary to prevent or remedy the market disruption. We want to simply give the president the tools that he or she may need in the future to deal with this new relationship.

Ryan-Hunter also contains a national security provision requiring the Secretary of Defense to inform the ITC whether the injured U.S. producers make components that are critical to the U.S. defense industrial base, and if so, if those components are competitive with the imports from China that are found to be injuring the U.S. producers. The Secretary of Defense will be prohibited from procuring those defense products from China unless the president waives this provision based on the national security interests of the United States.

Title II of Ryan-Hunter amends the Exchange Rates and International Economic Policy Coordination Act of 1988, which requires the Secretary of Treasury to submit to the Congress semi-annual reports regarding U.S. trading partners' exchange rate and economic policies.

Under the act, consistent with the International Monetary Fund's Articles of Agreement, if a trading partner is found to be manipulating its exchange rate for the purposes of preventing effective balance of payments adjustments or gaining an unfair competitive advantage in international trade, the Secretary is instructed to engage in negotiations, either bilaterally or in the IMF, to correct the problems

unless the Secretary determines and informs the Congress that such negotiations would have a serious detrimental impact on vital U.S. economic and security interests.

Title II of Ryan-Hunter also enhances existing law by establishing that the Secretary's semi-annual reports to Congress also shall evaluate whether any other country engages in fundamental misalignment of its currency. This is defined as a form of exchange rate manipulation that exists when there is a material sustained disparity between the observed levels of an effective exchange rate for a currency and the corresponding levels of an effective exchange rate for that currency that would be consistent with fundamental macroeconomic conditions based upon a generally accepted economic rationale.

If the Secretary finds manipulation or fundamental misalignment that causes or contributes to material adverse impact on the U.S. economy, the United States shall oppose a proposed change in any international financial institution's governance arrangement that would benefit the country involved for as long as it continued to engage in the manipulation or fundamental misalignment.

I want to be clear: This legislation seeks solely to ensure a healthy and fair trade relationship with China. It is believed that if China and other Asian countries would phase out currency market intervention, the U.S. trade deficit would be cut by about half.

U.S. GDP would increase by as much as \$500 billion, and employment would expand by as many as five million new jobs. In addition, solving those misalignments would also benefit China. Yuan revaluation would raise incomes and living standards immediately and permit the Chinese government to spend more on much-needed social investments. I believe we're beginning to see some of that lack of investment come home to roost in some of their social problems that are emerging.

Longer-term, more balanced trade and a more rapidly growing U.S. economy would create a more secure and rapidly growing market for which Chinese exports would be welcome in the United States.

Again, I want to thank this Commission and the commissioners for holding this hearing today and for all your efforts to provide Congress with the information that we need to develop a comprehensive strategy with regard to China. I believe that this will ensure a safe and prosperous Chinese trading partner and provide domestic manufacturers with a market to export their products and grow the U.S. economy.

One thing is clear, the Chinese have a clear plan for dealing and trading with the United States and for becoming an economic superpower. It is up to the Congress of the United States and the

President of the United States to work together to do the same for the citizens of this country.

It is long past the time for action on this topic as this Commission has stated many times. The House of Representatives must pass the Ryan-Hunter bill and begin the process of providing for a fair trade environment.

I would just like to say, as this ends, I have a tremendous respect for the Chinese culture. In many ways I'm infatuated with it and love reading about it, and the extent and the time that they have been on this planet as a civilized society and sometimes not-so-civilized. This is not in any way a dismissal of the kind of contribution that their society has made to our planet.

But this is clearly just asking them to play by the rules that everyone else is playing by. This is asking them to live up to the commitments that they made when they joined the WTO. So, again, I thank you. I apologize for holding up Congresswoman Bordallo, who's a good friend. Thank you again very much.  
[The statement follows:]

**Prepared Statement of Tim Ryan  
A U.S. Representative from the State of Ohio**

Good Morning. First, I would like to thank Commissioner Wortzel, Commissioner Reinsch, and the rest of the U.S.-China Economic and Security Review Commission for all of your hard work on these important issues. Each year the Commission fulfills its congressionally mandated duty with professionalism and accuracy, and your annual reports provide a sobering look at our current trade crisis, and the national security implications of record trade deficits with the People's Republic of China. This morning, the Commission will explore China's military modernization and discuss the implications for the region and the World. There is no question that the PRC has a military that is growing in capability, and seeking to become the dominant force in the region. There is no doubt that China is using U.S. dollars to finance this expansion and modernization, and currency misalignment is to blame. It is my hope that this Congress will take action on legislation to address this issue and slow China's unsustainable policies, and questionable military expansion.

Let me be clear. I believe that a free and fair trade relationship with the PRC would be greatly beneficial to the citizens of both countries. However, we are not dealing with an open or fair trading partner in China. The Chinese government provides its industries with a series of subsidies that places U.S. companies at an insurmountable disadvantage. Among the most damaging of China's predatory trade practices is currency misalignment. As the Commission is aware, China's currency misalignment acts as a subsidy on goods exported to the United States to the tune of about 40 percent. Here is how it works. When buying Chinese goods, U.S. importers pay Chinese exporters in U.S. dollars. Then the Chinese sellers must trade in their surplus dollars at roughly 7.8 yuan for each U.S. dollar to the Chinese government. Because of the enormous trade deficit and foreign direct investment (FDI), there is an excess supply of yuan. Without China's currency peg, the yuan would rise in value against the dollar because of its formidable demand, and the rapid development of the Chinese economy over the last 10 years. If the yuan appreciated in a market-driven manner, it is estimated that the value relative to the dollar would rise by approximately 40 percent. Since the Chinese do not allow this to happen, it amounts to a 40 percent subsidy. With this appreciation of the yuan, the price of Chinese products would rise, Chinese exports would drop, and exports to China from domestic American companies would increase. However, China does not allow this to happen because it

would risk disrupting its strategy of maintaining artificially high economic growth through export driven development and investment in foreign reserves. As a result of these manipulative strategies, the United States and China share the most imbalanced bilateral trade relationship in the world, at significant cost to our workers and manufacturers. All totaled, China alone accounts for nearly \$200 billion or 27% of the United States' nearly \$730 billion trade deficit.

The Chinese conduct this illegal currency misalignment by simply printing money and sterilizing about half of their currency oversupply by issuing bonds and giving subsidies to state owned companies. To maintain its peg, amid a huge inflow of foreign capital, the Chinese government has amassed over \$600 billion in foreign exchange reserves.

Allowing China to collect massive currency reserves is not only a concern for the U.S. economy, but also for our national security. As my friend and colleague Duncan Hunter Ranking Member on the House Armed Services Committee "China is arming itself with weapons it purchased with the dollars earned from its massive trade surplus with the United States." Further, according to an article dated March 23, 2007 in the Washington Times, China has announced double-digit military spending increases each year for the past two decades. The new and advanced weapon systems being purchased by the Chinese military are being financed by the massive reserve in U.S. dollars owned by the Chinese government mainly as a result of their currency misalignment.

To address these threats to both our economy and our national security, Congressman Duncan Hunter and I introduced the Fair Currency Act of 2007 or, as it has commonly been referred to, the Ryan-Hunter bill. In summary, this bill will allow a U.S. industry to use the anti-subsidy (countervailing duty) law to seek relief from the injury caused by imports that benefit from a subsidy in the form of foreign exchange-rate misalignment. It defines "exchange-rate misalignment" as a foreign government's maintenance of an undervalued currency by means of protracted large-scale intervention in currency markets, regardless of the intent of the foreign government. The bill clarifies that exchange-rate misalignment meets all three WTO tests for a prohibited export subsidy: governmental financial contribution; benefit; and specificity. Ryan-Hunter gives guidance to the Commerce Department on how to determine whether a countervailable subsidy due to exchange-rate misalignment exists, and the level of its magnitude. The bill implements the WTO's agreements on subsidies in U.S. domestic law in two ways: (1) by explicitly adding exchange-rate misalignment as a countervailable subsidy under U.S. law; and (2) by clarifying that the U.S. countervailing duty law applies fully and equally to subsidies in both market and non-market economies, such as China.

Ryan-Hunter also amends the China-specific safeguard mechanism that will remain in effect until December 2013 as part of China's terms of accession to the WTO. The safeguard provides for possible relief from import surges from China that are found to disrupt the U.S. market. Ryan-Hunter instructs the U.S. International Trade Commission to evaluate whether exchange-rate misalignment exists in determining if market disruption is present in such cases. If market disruption is found, the President may "proclaim increased duties or other import restrictions" with China "for such period as the President considers necessary to prevent or remedy the market disruption."

Ryan-Hunter also contains a national security provision requiring the Secretary of Defense to inform the ITC whether the injured U.S. producers make components that are critical to the U.S. defense industrial base. If so, and if those components are like or directly competitive with the imports from China found to be injuring the U.S. producers, the Secretary of Defense will be prohibited from procuring those defense products from China unless the President waives this provision based on the national security interests of the United States.

Title II of Ryan-Hunter amends the Exchange Rates and International Economic Policy Coordination (IEPC) Act of 1988, which requires the Secretary of the Treasury to submit to the Congress semi-annual reports regarding U.S. trading partners' exchange-rate and economic policies. Under the act, consistent

with the International Monetary Fund's Articles of Agreement, if a trading partner is found to be "manipulating" its exchange-rate for purposes of preventing effective balance of payments adjustments or gaining an unfair competitive advantage in international trade, the Secretary is instructed to engage in negotiations, either bilaterally or in the International Monetary Fund, to correct the problem unless the Secretary determines and informs the Congress that such negotiations would have a serious detrimental impact on vital U.S. economic and security interests.

Title II of Ryan-Hunter also enhances existing law by establishing that the Secretary's semi-annual reports to Congress also shall evaluate whether any other country engages in "fundamental misalignment" of its currency, defined as a form of exchange-rate manipulation that exists when there is a material, sustained disparity between the observed levels of an effective exchange-rate for a currency and the corresponding levels of an effective exchange-rate for that currency that would be consistent with fundamental macroeconomic conditions based upon a generally accepted economic rationale. If the Secretary finds manipulation or "fundamental misalignment" that causes or contributes to a material adverse impact on the U.S. economy, the United States shall oppose a proposed change in any international financial institution's governance arrangement that would benefit the country involved for as long as it continued to engage in the manipulation or "fundamental misalignment."

I want to be clear; this legislation seeks solely to ensure a healthy and fair trade relationship with China. It is believed that if China and other Asian countries were to phase out currency market intervention, the U.S. trade deficit would be cut by about half. U.S. GDP would increase by as much as \$500 billion, and employment would expand by as many as 5 million new jobs. In addition, solving these misalignments would also benefit China. Yuan revaluation would raise incomes and living standards immediately, and permit the Chinese government to spend more on much needed social investments. Longer-term, more balanced trade and a more rapidly growing U.S. economy would create a more secure and rapidly growing market for Chinese exports in the United States.

Again, I want to thank the Commissioners for holding this hearing today, and for all their efforts to provide the Congress with the information that we need to develop a comprehensive strategy with regard to China. This will ensure a safe and prosperous Chinese trading partner, and provide domestic manufacturers with a market to export their products and grow the U.S. economy. One thing is clear; the Chinese have a clear plan as to how to deal and trade with the United States, and how to become an economic superpower. It is up to the Congress and the President to work together to do the same for the citizens of this country. It is long past the time for action on this topic; the House of Representatives must pass the Ryan-Hunter bill and begin the process of providing for a fair trade environment.

HEARING COCHAIR WORTZEL: Thank you. Congressman Ryan.

Congresswoman Bordallo, we all know about the important role that the military facilities on Guam play in the U.S. defense structure, so it's a distinct pleasure to have you here.

Congresswoman Bordallo is the Delegate from Guam and is presently serving her third term in the House. She is the first woman to represent Guam in that capacity. She's the new Democratic cochair with Congressman Forbes on the Congressional China Caucus and serves on the Armed Services Committee's Subcommittee on Readiness and its Subcommittee on Seapower and Expeditionary Forces.

She also serves on the Natural Resources Committee's Subcommittee on Fisheries, Wildlife and Oceans and its Subcommittee on Insular Affairs. It really is a pleasure to have you here.

**STATEMENT OF MADELEINE BORDALLO  
A U.S. REPRESENTATIVE FROM GUAM**

MS. BORDALLO: Thank you very much. I too want to thank Congressman Ryan, a very good friend of mine, and fellow member of the Armed Services Committee at one time.

Cochairmen Wortzel and Reinsch and Chairman Bartholomew and commissioners, thank you for affording me the opportunity today to appear before the Commission and to provide testimony on behalf of the people of Guam and members of the Congressional China Caucus.

I greatly appreciate this opportunity to provide brief testimony on the continued importance of evaluating the impact that China's ongoing efforts to improve and modernize its military capabilities has on the national security of the United States and especially on the Asia-Pacific region.

Before I begin, I would like to thank my colleague Congressman Ike Skelton, who is now the chairman of the House of Representatives Committee on Armed Services, for his recommendation that I become cochair of the Congressional China Caucus. I also want to thank my colleague, Congressman Randy Forbes of Virginia, for his support of my becoming the cochair as well.

My colleagues' support for my serving in this capacity is much appreciated and humbling. Of course, I also want to thank the people of Guam who elected me to serve for a third term as their representative in Congress.

Guam is the part of the United States that is nearest to China. I always like to say that when I address any of our neighboring countries. We are your closest American neighbor. And Guam, due to its geographical location, is a strategic resource for the United States and is uniquely impacted by U.S.-China policy and the Asia-Pacific regional security situation in general. I can't emphasize that enough.

The recent announcement that the Department of Defense plans to station more U.S. military personnel and assets on Guam, when combined with the decision to relocate to Guam a significant number of United States Marines currently stationed in Okinawa, Japan, is indicative of the enhanced role that Guam will play in the years to come toward ensuring that U.S. national security interests in the Asia-Pacific region and those of our allies are defended.

As you know, U.S. national security interests in the Asia-Pacific region are diverse and very challenging. As you know, the formulation, adoption and implementation of policies that will help our country successfully and peacefully meet these diverse challenges, while simultaneously adapting to account for the shifts in or

development of intentions, capabilities and policies of certain countries in the region will along with events in the Middle East be one of the principal tests by which future generations of Americans will measure the quality of this generation of American statecraft.

We must succeed in this effort and we must do so in a manner that establishes a lasting peace for the region. We must also do so in a manner that builds upon, strengthens, and diversifies the trust that our current allies have in the United States.

We further must endeavor to convince the people and the government of potential competitor states of the benefits of constructive, transparent and continued engagement across the wide range of political, economic, security and cultural areas.

Our success in accomplishing these objectives will define the legacy of peace, stability and communication with the Asia-Pacific region that those of future generations of Americans will inherit and also be able to further improve.

The Congressional China Caucus believes that few challenges with respect to U.S.-China policy and the U.S. interest in the maintenance of a stable Asia-Pacific region are greater than the U.S. response to the rise of Chinese military power during this century.

The Congressional China Caucus supports this round of hearings to review the extent to which the People's Republic of China intends to, is capable of, and may adopt policies that would advocate for conduct of irregular forms of warfare, conduct of traditional forms of warfare, and influence of military balance to the detriment of the United States.

These are important issues for our government to study. The findings of this hearing should be considered for inclusion in the dialogue between the United States and China, and it is my hope that the Congressional China Caucus can help in this regard.

The Congressional China Caucus respectfully requests that the Commission take into consideration four items during the course of the hearing sessions today and tomorrow. These issues are of primary importance to the Congressional China Caucus, and I am confident that the Commission will agree that these are important factors and issues to consider.

First, the need for the government of the People's Republic of China to work to increase the transparency of its foreign policy and military decision-making processes, its current and planned military capabilities, and the true and the accurate amount of its defense and national security budgets among other issues is paramount.

I think we can all agree that greater transparency is essential to the establishment and the maintenance of trust between the United States, our allies in the region, and the People's Republic of China.

Second, the need for the United States to commit itself to establishing a greater degree of interagency coordination with respect to the U.S.-China policy and posture is also paramount.

The United States' relationship with China is broad and vibrant and can be more so. But this dynamic engagement with China must be better coordinated in order to be as effective as possible and to promote U.S. interests and support those of our allies.

The interagency process with respect with the U.S.-China policy must be improved, and soon. Coordination is difficult and thankless work. But, ladies and gentlemen, it must be done.

Third, obviously, China is not the only country with hard and soft power within its region. Established regional powers such as Australia, Japan and South Korea are force multipliers for U.S. policy in the region. The United States has long-standing security commitments based on economic and political priorities it shares with these allies.

Also, the multifaceted relationship the United States enjoys with India is strong and productive. Lastly, other countries in the region are firmly committed to helping combat terrorists and pirate organizations active in the Asia-Pacific region, and thus help us achieve our national security objectives there.

So by no means should observers view the rise in Chinese military capabilities with respect to the United States as a bipolar arrangement.

In fact, the situation is much more diverse and dynamic and as a result more complicated. This leads me to the fourth item that I wish to note: the extent to which knowingly provocative statements or actions on the part of our allies in the region or elsewhere complicate further the vital task of establishing and maintaining peace in the region with respect to the growth and modernization of China's military.

As you know, history can provide examples of small altercations resulting in big conflicts. Therefore, I urge the Commission to adopt a holistic perspective and to review the views, policies, actions, and the actors themselves of our allies and other countries in the Asia-Pacific region.

Once again, I thank you for affording me the opportunity to represent the people of Guam and more importantly the members of the Congressional China Caucus before the Commission today. Thank you. [The statement follows:]<sup>1</sup>

HEARING COCHAIR WORTZEL: Thank you very much, We'll be joined in a few minutes by Congressman Dana Rohrabacher, and

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<sup>1</sup> [Click here to read the prepared statement of U.S. Representative Madeleine Bordallo](#)

until he arrives, we'll take a short break. [Whereupon, a short recess was taken.]

**PANEL II: BEIJING'S DOCTRINE ON THE CONDUCT OF  
"IRREGULAR FORMS OF WARFARE"**

HEARING COCHAIR WORTZEL: Our second panel is present. We're going to seat that panel and start that section of that hearing. When Congressman Rohrabacher comes, we'll break for a few minutes for him to speak and move back to it. This panel will address China's capacity for irregular warfare as defined in that Quadrennial Defense Review of 2006. The Commission hopes that the panelists will be able to offer answers to several key questions including what Chinese military writings say about forms of economic warfare such as destroying enemy supply chains or manufacturing, mobilizing an adversary's populace in China's favor, managing public perceptions about China in a potentially hostile nation, and using international law to limit the actions of an opponent.

The first to speak will be Mr. Michael Vickers who is Senior Vice President for Strategic Studies at the Center for Strategic and Budgetary Assessments here in Washington. He was a Senior Advisor to the Secretary of Defense for the QDR during 2005-2006 and is a former Army Special Forces Officer and CIA Operations Officer.

Second will be Dr. William Schneider. He's the Chairman of the Defense Science Board here in Washington. He also concurrently serves as the President of International Planning Services which is an international trade and finance advisory firm, and is an Adjunct Fellow of the Hudson Institute.

Dr. Derek Reveron is Associate Professor of National Security Affairs at the Naval War College. He received his M.A. in political science and Ph.D. in public policy at the University of Illinois. He sits on the editorial boards of the Defense Intelligence Journal and the Naval War College Review.

Dr. Robert Bunker is the CEO of Counter-OPFOR Corporation in Claremont, California. He's been a member of the Los Angeles County Terrorism and Early Warning Group since 1996 and has counterterrorism operational training experience.

He's also a former Adjunct Professor of National Security Studies at California State, San Diego, and is a fellow at the Institute of Land Warfare.

Thank you very much. Just to remind you all, we're hoping for seven minutes of oral testimony from each witness followed by a round of questions, and your written testimony will go into the record. Mr. Vickers, please begin.

**STATEMENT OF MR. MICHAEL G. VICKERS  
SENIOR VICE PRESIDENT FOR STRATEGIC STUDIES, CENTER  
FOR STRATEGIC AND BUDGETARY ASSESSMENTS**

MR. VICKERS: Thank you, Chairman Wortzel, and members of the Commission for the opportunity to participate in this public hearing of the U.S.-China Economic and Security Review Commission.

I wish to make four brief points in my opening statement. The People's Republic of China could pose a number of major security challenges for the United States in the decades ahead. The scope of potential challenges could range from more intense strategic competition on a global scale to armed conflict. The security challenges which a more powerful and assertive China could pose could extend well beyond any potential conflict over Taiwan.

Managing the rise of China so that it does not become a hostile competitor of the United States is and should remain a central aim of U.S. policy.

Given the strong emphasis on asymmetric warfare in Chinese strategic doctrine, one should expect China to employ irregular forms of attack in any conflict. A Chinese attack on Taiwan, for example, would likely include special operations and cyber attacks not only against Taiwan proper, but also potentially against U.S. bases and forces in the region.

Cyber warfare might even be employed against targets within the U.S. itself. Such unrestricted warfare could include, but not be limited to, attacks on financial, economic, energy and communications infrastructure. Purer forms of irregular warfare, such as use of surrogates, could also be employed in a China-Taiwan conflict.

Should China at some point choose to become a strategic competitor of the United States, it could also find it in its interests to engage in proxy wars to increase its global influence and weaken that of the United States.

The emergence of disruptive capabilities, particularly those stemming from advances in nanotechnology and bioscience and technology, could greatly facilitate new forms of clandestine and covert strategic attack.

Some of these capabilities--for example, advances in the cognitive sciences--could also be used for counter-irregular warfare.

Finally, a global security competition could also emerge in the decades ahead in which the United States and China compete to provide order to states threatened from either external or internal actors.

Now, I wish to strongly emphasize that none of this is inevitable,

but it is possible. We should do everything in our power to dissuade these competitions and deter conflict, but it's essential that we also hedge against these possibilities.

I would be honored to address any questions you may have during the question and answer session.

HEARING COCHAIR WORTZEL: Thank you. Dr. Schneider.

**STATEMENT OF DR. WILLIAM SCHNEIDER, JR.  
ADJUNCT FELLOW, THE HUDSON INSTITUTE  
WASHINGTON, D.C.**

DR. SCHNEIDER: Thank you, Mr. Chairman. It's a privilege to once again have an opportunity to appear before this Commission. China's military modernization has been underway for more than two decades and in recent years has evolved in a manner that has witnessed China's transition from a nation that was preoccupied with regional and local security concerns to becoming a global military power.

While the Maoist concept of "People's War" remains an enduring expression of China's demographic mass and geographic depth, its modernization themes reflect a decisive shift away from the approach embodied in Maoist theories in the '50s and '60s in favor of a much more technology-centered effort.

This technology-driven effort supports the global reach of China's diplomacy and international interest that have paralleled China's profound economic transformation.

While some aspects of China's modernization are similar to the path taken by other modern industrial societies, other aspects of China's program differ significantly, and these observations can be supported by a few illustrations.

China is acquiring modern capabilities that mimic those found in other contemporary defense establishments. China is modernizing its long-range nuclear weapons delivery systems in both qualitative and quantitative terms. The mobile land-based intercontinental DF-31 series--its upgraded land-based ICBMs--and the JL-1 submarine launched ballistic missile are counterparts to systems deployed by other major powers, though at present on a smaller scale.

The military and strategic significance of these platforms will be magnified if they are equipped with multiple independently targeted re-entry vehicles.

The general purpose forces, especially those suitable for expeditionary campaigns and combined ground-air operations, are also being recapitalized and modernized. Two aircraft carriers are being acquired as are the current generation of Russian combat aircraft, diesel-electric submarines, surface naval combatants, strategic airlift,

airborne warning and control systems, and aerial tankers.

More advanced indigenous aircraft will soon be deployed that lever the PRC's access to advanced dual-use technologies from the United States, Europe and Japan.

The advanced state of China's civil sector telecommunications infrastructure implies that its modernization program is well supported by contemporary command-control-and-communications technologies as well.

While some of these capabilities have been acquired from Russia, China's access to advanced technology from the global market has enabled China to create military capabilities that are invested in indigenous developments as well.

China's acquisition of military technologies from Russia and modern civil technologies from elsewhere in the world is supplemented by a very aggressive commercial and clandestine defense industrial espionage effort as well.

The scope, though not yet the scale, of these investments is consistent with global aspirations, but by most assessments is excessive in relation to China's regional security needs.

However, China has been silent on the doctrinal and policy basis that is driving the unique character of its modernization and recapitalization effort, and moreover China's investment continues to grow significantly.

Concern about China's silence on the rationale for its modernization program has prompted the U.S. government to appeal on numerous occasions for greater transparency about the aims of its modernization and recapitalization effort. More recently, the Chairman of the U.S. Joint Chiefs of Staff, General Peter Pace, reiterated this request on his recent visit to China.

Apart from embryonic confidence-building measures, China has not responded to requests for greater transparency leaving China's defense modernization open to many alternative interpretations.

In looking at their investment in asymmetric military capabilities, a few points come to mind. First, while some aspects of China's defense modernization and recapitalization efforts have readily understood parallels to those of other industrial nations, some aspects of their defense program are unique in scale and their comprehensive character.

Investments in technologies that in turn have created capabilities for what the Commission has described as irregular means and methods to prosecute war serve to deepen the enigma about China's defense modernization.

Investment in these irregular capabilities by any nation can be described as being consistent with an anti-access strategy, a dimension

of an asymmetric approach to defense investment.

The underlying concept reflects a recognition that investment in traditional military technologies, especially against the United States, would be unlikely to offer any benefit in the form of supporting coercive diplomacy or military advantage.

However, a much lower level of investment in well-chosen asymmetric capabilities could in some circumstances limit the ability of the United States to achieve its military aims. In suitable circumstances, the ability of the U.S. to employ military power could be affected by a well-executed pattern of asymmetric investments by either significantly raising the costs of U.S. military operations or by augmenting the capabilities of a more limited traditionally-equipped military force to provide support for coercive diplomacy or increased military effectiveness in time of war.

A decade or so ago, the Defense Science Board engaged in some speculative activity that was not associated with any specific country about opportunities presented by the abundance of very effective but low cost technologies widely available in the civil sector to create a highly effective anti-access suite of military technologies.

The study concluded that such an approach was practical because of the impact of modern information and telecommunications technology on military capabilities. By focusing the application of these technologies on asymmetric or anti-access capabilities such as information operations and electronic warfare, mine warfare, air defense, cruise missiles, anti-satellite operations and similar activities, which lever widely available civil sector or dual-use enabling technologies, such capabilities are aimed at specific U.S. military advantages.

I think the message is that the science and technology basis is adequate to support a very robust irregular warfare capability and the professional literature in China is abundant about speculation about the use of irregular capabilities. What is missing is any authoritative insight from the PRC as to the aims of this investment and how it ties in with our foreign policy, and I think that's the problem of China's opacity that the U.S. government is currently struggling with.

So I'll bring my remarks to a halt, Mr. Chairman. Thank you.  
[The statement follows:]<sup>2</sup>

HEARING COCHAIR WORTZEL: Thank you, sir. Dr. Reveron.

**STATEMENT OF DR. DEREK S. REVERON  
ASSOCIATE PROFESSOR, NATIONAL SECURITY DECISION**

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<sup>2</sup> [Click here to read the prepared statement of Dr. William Schneider, Jr., Adjunct Fellow, The Hudson Institute, Washington, D.C.](#)

**MAKING DEPARTMENT, U.S. NAVAL WAR COLLEGE,  
NEWPORT, RHODE ISLAND**

DR. REVERON: Good morning and thank you for inviting me down here today to talk. Before I begin, I must note that my written statement and remarks today are my own exclusively and don't represent the Department of Defense or the Naval War College.

Last year, when Chinese President Hu came to the United States, I was struck by two very different receptions he received in Washington, D.C. and Washington State. On the tarmac in Everett, Washington, he was greeted by smiling children and ribbon-waving dancers. Microsoft Chairman Bill Gates hosted him at his home at what could only be described as a state dinner, and Boeing rolled out the red carpet in celebration of China's recent aircraft purchases.

The same cannot be said for President Hu's visit to Washington, D.C. China called the trip a state visit while the United States called it just a visit. Instead of a state dinner, President Bush hosted a social lunch. Instead of celebrating recent billion dollar trade deals, the U.S. confronted China's currency policy. Instead of celebrations, there were gaffes. Before its national anthem was played, the announcer misspoke the official name of China referring to it as the Republic of China, Taiwan's official name. And later, during the press conference, President Hu was heckled. Many in the District felt the summit was nothing to celebrate.

The two different receptions Hu experienced are useful for understanding China's relationship to the United States. Depending on one's perspective, China either appears as a giant smiling panda or a fire-breathing dragon. The chosen image is important and often frames America's understanding of China. To be sure, the image China wants to project is important, too.

China, with its strategy of peaceful rise, pursues policies to bolster the panda image because it fears that other countries will attempt to restrain its growth. To counter perceptions of the fire-breathing dragon, Beijing has long placed significant emphasis on monopolizing information and using propaganda.

Since the Chinese government largely controls the media, it easily speaks with a single voice or conveys clear policy preferences through its various state-run media outlets like Xinhua.

I don't see this as a consequence of communism. I tend to subscribe to Tom Barnett's view that the Chinese Communist Party is 30 percent communist and 70 percent Soprano. Rather this is simple pure power politics. This is more Huey Long than Chairman Mao. There is one-party rule in China and it uses its state resources to maintain it.

Xinhua is one tool the Party uses to convey its message. My analysis of the 2001 EP-3/F-8 collision suggests China did use perception management. However, I cannot say that these findings are generalizable. It's unusual in the global media age that one side can monopolize information and the likelihood of this occurring again is low.

Outside of specific cases, though, I would like to highlight that state-controlled media outlets can be used to influence international perceptions. My remarks will focus on why China seeks to manage its perception. In short, its reputation determines how other states judge its international character and interpret its intentions.

China therefore seeks a reputation that is benign, if not benevolent. At least since 1992, China has worked to avoid being labeled the new evil empire through a combination of diplomacy and strategic communications.

China mainly wants its image to be the smiling panda and not the fire-breathing dragon. While I think Stephen Colbert's "frenemy" construct is more useful to understand China, Beijing downplays its defense spending, casts itself in a positive light relative to the United States, and provides well-targeted foreign assistance.

Recently, the Caribbean has become a focal point for China because it contains four states that still recognize Taiwan as an independent country. In 2004, China successfully induced the countries of Dominica and Grenada to withdraw diplomatic recognition of Taiwan. In return, Beijing provided Dominica \$117 million in aid and Grenada \$100 million of aid, including a new cricket stadium. The aid was well-timed coming in the aftermath of the devastating 2004 Hurricane Ivan.

To win hearts and minds, China actively reaches out to foreign publics through major infrastructure projects like stadiums. For example, Cricket World Cup is currently being played in nine Caribbean states. Of the 12 stadiums built or refurbished in the last two years, the Chinese government funded three. Interestingly, Taiwan has also used the cricket tournament to maintain relations with Caribbean countries by funding cricket facilities in two countries.

Similar sovereignty battles play out in Central America and Africa. Both China and Taiwan build stadiums, parliament buildings, palaces, and transportation infrastructure, with the intent to illustrate the generosity of their assistance to their targeted populations.

Some countries have learned that it's easier to accept Chinese assistance instead of American because the Chinese have fewer demands and ask fewer questions. General Jones, former U.S. European Commander, testified in 2005 on this problem. He said, to paraphrase a statement made to me by [an] African leader about the

growing China relationship in Africa. "We love the United States. You above all else tell exactly what we need, and then China turns around and gives it to us."

This, however, might be changing. There are emerging signs that some countries are resisting what they see as China's exploitative policies, the dumping of Chinese goods, and the use of Chinese labor to build infrastructure projects.

In this brief testimony, I tried to highlight that China actively promotes a positive image of itself as a reaction to the "China threat theory" and secure natural resources to promote its economic development. China actively promotes a non-aggressive image of itself through a policy of non-interference, outreach to foreign publics and governments through public works projects, participation in the international system and comparisons to the United States, which it characterizes as a hegemon on the offensive.

World opinion suggests its message is working. British, French, German, Spanish, Dutch and Russian publics hold more favorable views of China than the United States, according to a 2005 Pew Center poll. The low U.S. favorability ratings are based on how publics perceive U.S. foreign policy actions. In the event of a crisis between the United States and China, how the crisis is framed will be critical.

China's control of its media outlets and good relations with developing countries give it an advantage over the United States. With that said, China does not want to confront the United States or be perceived as a threat, peer competitor, or a rival. China needs the United States to continue its economic growth to meet the needs of its population. To counteract both real and imagined dangers of itself, China refutes threat claims and builds coalitions with the developing world to support it.

I expect this behavior to continue and only be effectively countered by local reaction to China's policies or China's hard-edged commercial diplomacy. The answer lies not in a more aggressive U.S. foreign policy but in allowing China's aggressiveness to alienate those countries it hopes to court.

With that, I'll look forward to your questions.  
[The statement follows:]

**Prepared Statement of Dr. Derek S. Reveron  
Associate Professor, National Security Decision Making  
Department, U.S. Naval War College, Newport, Rhode Island**

The Commission is particularly interested in exploring Chinese military doctrine about:

1. Forms of economic warfare such as destroying or interrupting supply chains or manufacturing
2. Attacking an enemy's infrastructure
3. Mobilizing the enemy's populace in China's favor

4. Managing public perceptions about China in a potentially hostile nation
5. Using international law to the limit the actions of an opponent
6. Using cyber-warfare, especially cyber-terrorism, against an opponent
7. Employing special operations attacks against an opponent's infrastructure

It is an honor to be invited to address the Commission to better understand the important security questions you are addressing during this hearing on China's military modernization. Before I begin my remarks, I must note that my testimony and subsequent comments are entirely my own and do not reflect the views of the Department of Defense, the Department of the Navy, or the Naval War College.

Last year when Chinese President Hu came to the United States, I was struck by two very different receptions he received. In Washington State, President Hu received a very positive reception. On the tarmac in Everett, he was greeted by smiling children and ribbon-waving dancers. Microsoft Chairman Bill Gates hosted him at his home with what could only be described as a state dinner. And Boeing rolled out the red carpet in celebration of China's recent aircraft purchases. By most accounts, the two-day visit was successful. President Hu called Washington State "a pioneer in the U.S. trading alliance with China" and noted that the state is "closer to China than any other place on [the] mainland United States."

The same cannot be said for President Hu's visit to Washington, D.C.

China called the trip a "state visit," while the United States called it just a "visit." Instead of a state dinner, President Bush hosted a "social lunch." Instead of celebrating recent billion dollar trade deals, the U.S. confronted China's currency policy and voiced concerns about the \$200 billion annual trade deficit. Instead of celebrations, there were gaffes. Before its national anthem was played on the south lawn of the White House, the announcer misspoke the official name of China referring to it as The Republic of China—Taiwan's official name. And later during the press conference, President Hu was heckled. Many in the District felt the summit was nothing to celebrate.

In spite of the less-than-spectacular U.S.-China summit, the current administration has emphasized areas of cooperation between the United States and China. For example, the 2006 National Security Strategy (NSS) notes: "China shares our exposure to the challenges of globalization and other transnational concerns. Mutual interests can guide our cooperation on issues such as terrorism, proliferation, and energy security. We will work to increase our cooperation to combat disease pandemics and reverse environmental degradation." China emphasizes a similar message.

While, the NSS is optimistic about China, the two different receptions Hu experienced are useful for understanding China's relationship to the United States. Depending on one's perspective, China either appears as a giant smiling panda or a fire-breathing dragon. The chosen image is important and often frames Americans' understanding of China. To be sure, the image China wants to project is important too; China with its strategy of "peaceful rise" pursues policies to bolster the panda image because it fears that other countries will attempt to restrain its growth. China is not unusual in this regard. States do manage perceptions and other states rely on perception to infer intentions, which will be the subject of my testimony.

Of the seven questions provided to me in advance, my remarks are focused on answering questions three and four to provide you the depth you expect. To combine them, I am essentially answering the question, "what is China doing to shape a positive image for itself?" I intend to provide evidence of the successful use of perception management, but also provide the overall context to make sense of China's strategic communications activities.

But first, I think it is important to understand how and why countries manage their international image.

In my Newport classroom, I continue to be impressed with students' observations that military power alone

cannot guarantee national security. Instead, students understand the importance of all elements of national power framed as the acronym DIME to encompass diplomacy, information, military, and economic forms of power. From an organizational standpoint, it is easy to identify the corresponding federal departments-- State for diplomacy (though the military plays a substantial role in diplomacy through shaping), Defense for military power (though State has a significant military capability through its counter narcotics activities), and Treasury, Commerce, or USTR for economic power (though this is primarily in the private sector). When thinking about information power, there is no good correlate to the other instruments of power. The Undersecretary of State for Public Diplomacy comes close to filling this role, but Karen Hughes' office is too small, the US government is too big, and opinion on policy is too diverse for the United States to communicate with a single voice, a single message, or a single face.

My students, who are problem-solvers by nature, get preoccupied with this anomaly and consider it when thinking about the future of America's grand strategy. They brainstorm new organizations to provide a single voice for US policy. Or they revive and upgrade the old US Information Agency. Or they reshape the interagency process through a "Goldwater-Nichols II" to produce a single message for the US government. Inevitably, they fail. They fail not for lack of good ideas, but delayed recognition that information cannot be monopolized in a free society like the United States where political leaders (past and present) or pundits have more access to the media than the government.

While this is becoming increasingly less so, the same is not true in China.

Beijing has long placed significant emphasis on monopolizing information, using propaganda, or manipulating information made available to the public. Since the Chinese government largely controls the media, it easily speaks with a single voice or conveys clear policy preferences through its various state-run media outlets to include Xinhua News Agency. I don't see this as a consequence of communism; I tend to subscribe to Tom Barnett's view that the Chinese Communist Party is 30 percent Communist and 70 percent Soprano. Rather, this is simple, pure political power politics. This is more Huey Long than Chairman Mao. There is one-party rule in China and it uses state resources to maintain its rule. Xinhua is one tool the Chinese Communist Party uses to promote Chinese nationalism and preserve its monopoly of political power.

It's important to note that the primary target of Xinhua is the domestic Chinese audience, which accepts its stories with a grain of salt. But in the global media environment, Xinhua reporting is available to anyone with access to the worldwide web; and Xinhua feeds other news outlets like AP or Reuters.

China is also expanding its media reach. State-run China Radio International in January 2006 launched an FM station in Kenya, which will compete with BBC, VOA, and other local stations. Like all media outlets, Xinhua and China Radio International exhibit a particular bias in its coverage, but because of its control by the Chinese government it can be used to disseminate official policy or shape opinion favorable to the Chinese government.

### *Perception Management*

My research of China's reaction to the 2001 collision between a US Navy EP-3 and a Chinese F-8 fighter provides a ready example of how China used Xinhua to manage perceptions.

Perception management is generally used during peacetime and does not have to employ deceitful information. Its purpose is to influence the opinions of another country's public or leadership with the goal of improving a country's international image or deterring conflict. Considered more complex than deception (measures designed to mislead the enemy by manipulation, distortion, or falsification of evidence to induce him to react in a manner prejudicial to his interests), perception management results in the target misinterpreting data over time and being an unknowing participant in the process.

Perception management is an effective tool against perceived adversaries. As we study in US war colleges, Sun Tzu sees “all warfare is based upon deception.” Countries use such practices in order to protect strategic interests while deterring conflict. It is widely accepted by China’s military elite that it is better to subdue the enemy without engaging it in battle. As a result, heavy reliance is placed upon manipulating an adversary’s cognitive process. In conducting such efforts, the Chinese place great merit on perceptions and/or misperceptions, embracing their full potential. This concept of strategy goes beyond attempts merely to outwit the opponent by conveying false intentions; it involves the more sophisticated task of directly manipulating a perception of reality, and in particular, producing perceptions that directly benefit China.

For perception management to be successful the goal cannot be too disconnected from reality; plausibility matters. For example, during the initial phase of *Operation Iraqi Freedom* as US commanders announced the arrival of coalition forces in Baghdad, the Iraqi spokesperson dubbed “Baghdad Bob” responded with “They have started to commit suicide under the walls of Baghdad. We will encourage them to commit more suicides quickly.” Baghdad Bob’s comments were rejected by western audiences and were subjected to ridicule. Nonetheless, some audiences accepted Bob’s version of events, but this has more to say about Arab society than it does about Iraq’s credibility. The main point, however, is that Western audiences had more than Baghdad Bob’s account to judge whether his statements were accurate.

The same cannot be said for coverage of the 2001 EP-3/F-8 collision as I detailed in “China’s Use of Perception Management.” The Chinese government through Xinhua cultivated a preexisting belief in many quarters that the United States is an uncontrollable hegemon and that the South China Sea is China’s sphere of influence. China bolstered its position by characterizing the EP-3 as a spy plane and charging that the United States violated its sovereignty by landing the disabled aircraft at Hainan Island. Further, by placing the F-8 pilot’s widow on television, China hoped to elicit sympathy for the accident and clearly place blame on the United States. By holding the US aircrew in isolation for the first three days and not releasing the aircrew until 11 days (after the United States expressed regret), China monopolized the information that led to the accident. In general, “the facts” about the collision were controlled by China. Ultimately, the United States apologized for the incident, regretted the loss of the Chinese pilot, and agreed to dismantle the aircraft.

My analysis of the EP-3/F-8 collision suggests China did use perception management. However, I cannot say these findings are generalizable. It is unusual in the global media age that one side can monopolize information and the likelihood of this occurring again is rare. Outside of specific cases, though, I would like to highlight that state-controlled media outlets can be used to influence international perceptions. My remarks will conclude with *why* China seeks to manage its perception. In short, its reputation determines how other states judge its international character and interpret its intentions. China therefore seeks a reputation that is benign, if not benevolent.

### *Smiling Giant Panda or Fire-Breathing Dragon*

At least since 1992, China has worked to avoid being labeled the new “evil empire.” But unlike the Soviet Union, China does not ideologically compete with the Western-sponsored international economic system, but has embraced it. Likewise, the United States does not economically isolate China, but actively trades with it. China does not promote revolutionary movements around the world, but provides UN peacekeepers in post-conflict zones. China is also viewed by the United States as indispensable to northeast Asian security, not destabilizing. Chinese military forces are postured for operations in north Asia, not poised on the border of western Europe like the Soviets were. Overall, China has embraced the current international system in ways the Soviets could never have imagined.

In spite of this, China is often identified as the next rival of the United States. Political scientists like John Mearsheimer, who are theoretically predisposed to identify a future balancing power, have identified China as the country to replace the Soviet Union in a bipolar world. Sam Huntington’s clash of civilization hypothesis also privileges China as a “Confucianist civilization” that

would clash with the West. These hypotheses about future conflict are reflected in the Chicago Council on Global Affairs 2006 survey that identified 50 percent of Americans believing that it is very likely that the growth of China's military power will lead to war. The view within Asia is even starker with 93 percent of Japanese, 76 percent of Russians, and 63 percent of Indians believing that China's growing military power is bad, according to the Pew Global Attitudes Project.

However, as China scholar Yong Deng notes, China believes that certain countries like Japan, India, Taiwan, and the United States have "fabricated the idea of a China threat to bolster a hostile containment policy toward China, to justify interferences in China's domestic affairs, including Taiwan, to maintain their hegemonic security structure in the Asia-Pacific, and to increase their own military expenditures and enhance their overall defense capabilities." While China's growing military power is viewed as threatening in the region, it is not seen by publics as replacing U.S. military power during the next 50 years, according to the Pew Global Attitudes Project. Tom Barnett places the China Threat Theory squarely into American distributive politics when he wrote, "the proponents of Big War (that cold-war gift that keeps on giving), found overwhelmingly in the Air Force and Navy, will go to any length to demonize China in their quest to justify high-tech weaponry (space wars for the flyboys) and super-expensive platforms (submarines and ships for the admirals, and bomber jets for both) in the budget struggles triggered by our costly wars in Afghanistan and Iraq."

I am not here to evaluate whether or not China poses a military threat to the United States; I find the "panda" or "dragon" label too simplistic. Instead, I would simply say that I find Stephen Colbert's "frenemy" construct helpful in this regard. Instead, I am here to say that China does actively counter the idea of a "China Threat" and works to defuse this through a combination of diplomacy and strategic communications. For example, earlier this month, Chinese Foreign Ministry spokesman Qin Gang refuted the China threat, saying anyone who can understand and recognize China's foreign policy would "never regard China as a threat." Its message is reinforced when China explicitly contrasts its non-interventionist foreign policy with United States' foreign policy activism, which has elicited negative world opinion.

China mainly wants its image to be a giant, smiling panda and not a fire-breathing dragon. It does so by cultivating its own legitimacy, downplaying its defense spending, casting itself in a positive light relative to the United States, and providing foreign assistance. China's 2004 Defense White Paper noted that one of its five goals included "shaping the international environment favorably in China's interest." Through its activities, Chinese strategic communications emphasizes five inviolable national interests: one China that includes Taiwan, domestic stability, economic globalization, a manageable international security environment, and international status.

An essential part of China not appearing threatening is minimizing negative perceptions of its military. While Chinese military spending growth has been steadily increasing, China pegs its spending at just \$45 billion. Even if this amount is underestimated, high estimates of \$120 billion are contrasted by China with US defense spending exceeding \$700 billion. However, if one takes into account the differences in costs between the United States and China and used purchasing power parity (PPP) to measure defense spending, then the Chinese military budget is closer to \$450 billion or ten times what it publicly acknowledges. But by using the non-PPP values, China presents itself as a small military, which is not very accurate. It is much better to estimate military strength not by how much it costs, but by what it is capable of in combat.

In addition to downplaying its military spending, China also emphasizes its participation in international institutions. To illustrate its commitment to international peace and security (not conquest), China currently provides 1,800 peacekeepers (the largest contribution from a UNSC permanent member). China also is an active participant in international trade organizations like the WTO and ASEAN.

#### *Stadium Diplomacy and Rogue Aid*

Relative to the United States, European Union, and Japan, China's assistance programs are modest.

However, China's programs are well-coordinated to advance its interests, and it regards commercial diplomacy as an effective tool to advance political goals. Beijing has also taken advantage of US missteps to engage with countries it might otherwise not. For example, US requests for article 98 exemptions from the International Criminal Court resulted in US aid being suspended to dozens of countries under the *American Service Member's Protection Act* until recently. With international military education and training programs cut-off, China seized the opportunity to train foreign military officers in China and provide military assistance to fill the void. While leading US Southern Command, General Bantz Craddock testified before the House Armed Services Committee in 2006 saying, "The PRC has been making headway into the region by using economic measures, employing diplomacy, building infrastructure, negotiating trade deals, and offering resources to cash-strapped militaries and security forces with *no strings attached*." I must emphasize the "no strings attached" point since it is an advantage China leverages. Up until last fall, the Article 98 requirement restricted SOUTHCOM from engaging with nearly one-third of the countries in the Western Hemisphere. And while the United States funds international officers to attend programs in the United States, China also provides funding for the officers families. But having had an international officer as a student who attended programs in the U.S. and in China, I can reassure you that the Chinese cannot compete with American professional military educational institutions like the Naval War College.

Recently, the Caribbean has become a focal point for China because it contains four of the 24 states that still recognize Taiwan as an independent country. In 2004, China successfully induced the countries of Dominica and Grenada to withdraw diplomatic recognition of Taiwan. In return, Beijing provided Dominica \$117 million of aid over six years and Grenada \$100 million of aid, including a new cricket stadium. The aid was well-timed coming in the aftermath of the devastating 2004 hurricane Ivan.

China actively reaches out to foreign publics through major infrastructure projects like stadiums. For example, Cricket World Cup is currently being played in nine Caribbean countries. Of the twelve stadiums built or refurbished in the last two years, the Chinese government funded three (Antigua, Jamaica, and Grenada). Interestingly, Taiwan has also used the cricket tournament to maintain relations with Caribbean countries by funding cricket facilities in St. Kitts & Nevis and in St. Vincent & the Grenadines. Similar sovereignty battles play out in Central America and Africa. Both China and Taiwan build stadiums, parliament buildings, palaces, and transportation infrastructure with the intent to illustrate the generosity of their assistance to the targeted populations.

In addition to providing public works, Beijing also promotes Chinese culture through Confucius Institutes, Chinese language schools, and international broadcasting. The Confucius Institutes facilitate Beijing's relationship with Chinese populations living throughout the world and are centers for China to reach out to local populations.

China also influences foreign audiences about US intentions. For example, last month after the Defense Department announced its intention to create a single military command for Africa, the *PLA Daily* promoted an instrumental explanation for the decision. The *PLA Daily* saw the US move as inevitable "to step up its [US] control over Africa." This interpretation overemphasizes the importance of West African oil because the change is more about smoothing existing bureaucratic lines and focusing US assistance. The Defense Department sees that Africa Command will "integrate US interagency efforts and assist diplomacy and development efforts." Yet the Chinese explanation is more believable given the increased use of the US military during the last five years.

Moisés Naím has characterized some Chinese foreign assistance as "rogue aid." Specifically, China's \$2 billion loan to Angola undermined the International Monetary Fund's efforts to force Angola to improve oversight and reduce corruption. Or, China's investments in the Sudanese energy sector are viewed as preventing decisive action in Darfur. Or China's support of environmentally unfriendly programs in the Philippines preempted the Asian Development Bank's efforts to encourage environmental protection.

In the cases I listed above, China used its foreign assistance to ensure access to raw materials and curry favor with the local populations. These motives are consistent with a country pursuing its national interests, but this behavior can have detrimental effects on its international reputation. By going around international institutions, comprehensive efforts to facilitate development and improve governance can be undermined.

Yet, some countries have learned that it is easier to accept Chinese assistance instead of American because the Chinese have fewer demands and ask fewer questions. General Jones, former US European Commander, testified in 2005 before the Senate Foreign Relations Committee on this problem. He said, "To paraphrase a statement made to me by an African leader about the growing China relationship in Africa, he says, 'we love the United States. You, above all else, tell us exactly what we need and then China turns around and gives it to us.'"

This, however, might be changing. Earlier this month, Angola's state oil company, announced it would discontinue talks with China's Sinopec on building a joint refinery. Angola was not willing to back a refinery that would only serve China's interests. There are also emerging signs that other countries are resisting what they see as China's exploitative policies, the dumping of Chinese goods, and the use of Chinese labor to build infrastructure projects. Sometimes, the Chinese populations in these countries become targets of violence. For example, in Zambia last year, the presidential election was marred with some violence directed at the 30,000 Chinese there. It appears that developing countries can and will resist any trade deal that is not mutually beneficial, so the honeymoon China is experiencing in the developing world may be undermined by its own behavior.

I must note that China is also learning that its commercial diplomacy comes at a political cost that sometimes does not serve its broader national interests. Its association with rogue regimes tarnishes its international image and its hard-edge business practices often undermine the goodwill its investments have generated. For example, China's support of Robert Mugabe in Zimbabwe has been waning and several Chinese firms recently withdrew from projects because Zimbabwe could not live up to its contractual obligations. While the relationship has historical depth, it could not withstand the realities of 21<sup>st</sup> century commerce.

### *Conclusion*

In this brief testimony, I tried to highlight that China actively promotes a positive image of itself as a reaction to the "China threat theory" and secure natural resources to promote its economic development. The war on terrorism has helped deflate the China threat as relations have improved with the United States, but China continues to actively promote a non-aggressive image of itself through a policy of non-interference, outreach to foreign publics and governments through public works projects, participation in the international system, and comparisons to the United States. Relative to its past, China has made great efforts to abate fears about China's economic growth and military power. Through its strategy of peaceful rise, the message is simple and exemplified by Foreign Ministry spokesman Qin Gang who said, "China adheres to peaceful development and advocates a harmonious society of lasting peace and common prosperity. That's what has allowed China to win trust, cooperation and friends in the world." This message is also accompanied with statements that characterize the United States as a hegemon on the offensive.

World opinion suggests its message is working. British, French, German, Spanish, Dutch, and Russian publics hold more favorable views of China than the United States, according to a 2005 Pew Center poll. The low US favorability ratings are based on *how* publics perceive US foreign policy actions. In the event of a crisis between the United States and China, how the crisis is framed will be critical. China's control of its media outlets and good relations with developing countries give it an advantage over the United States.

With that said, China does not want to confront the United States or be perceived as a threat, peer competitor, or rival of the United States. China needs the United States to continue its economic growth to meet the needs of its population. To counteract both real and imagined dangers of itself, China refutes

threat claims and builds coalitions within the developing world to support it. I expect this behavior to continue and only to be effectively countered by local reactions to China's policies. The answer lies not in a more aggressive US foreign policy, but in allowing China's aggressiveness to alienate those countries it hopes to court.

With that, I look forward to your questions.

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## **PANEL I: CONGRESSIONAL PERSPECTIVES**

HEARING COCHAIR WORTZEL: Thank you very much. Dr. Bunker, I'm going to delay you, if I may, and ask Congressman Dana Rohrabacher to speak. Congressman Rohrabacher is a Republican from the 46th District in California. He was elected to the House of Representatives in 1988 and he's presently serving his ninth term in office. He's the former chairman of the Science Subcommittee on Space and Aeronautics.

He's also former chairman and ranking member of the Subcommittee on International Organizations, Human Rights and Oversight, and a member of its Subcommittee on Asia and the Pacific and the Global Environment.

In these positions, he's been a forceful advocate of America's international trade competitiveness and he promotes a strong role for national security and U.S. foreign policy.

Thank you for being here, Congressman Rohrabacher. We're very pleased to have you.

### **STATEMENT OF DANA ROHRABACHER A U.S. REPRESENTATIVE FROM THE STATE OF CALIFORNIA**

MR. ROHRABACHER: I want to thank you for inviting me today, and I think we'll just go right into it, the fact that I believe that it is apparent that the Chinese government has embarked on a very well orchestrated campaign to put China on the path to global domination. That, I believe, is their goal. We are feeling the results of this successful effort as we run into roadblocks around the world--roadblocks to American foreign policy in Iran, Sudan, Venezuela, North Korea, Kazakhstan, Burma and elsewhere.

The Oversight and Investigation Subcommittee, which I chaired last year, held hearings on China's influence on U.S. foreign policy through U.S. educational and multilateral organizations and corporate America.

I believe that the single-largest long-term threat to the United States of America to our security and to our well-being is the attempt by the Chinese Communist Party to regain what it believes to be China's lost status as the most powerful military and economic power in the world.

It is successfully accomplishing its mission through successful perception management. Under the leadership of the Chinese Communist Party, one billion people or more are being educated daily

to hate America because we are, they believe, stopping them from achieving their rightful position of influence and power.

Unfortunately, when Western academics or policymakers warn of the impending danger of China, they are ridiculed and isolated by American business, by media, as well as by educational institutions.

Not only is the potential threat of having this massive power in the world being dominated by, frankly, a clique of gangsters, which are committing ghoulissh crimes against their own people, but we end up having a situation when people are trying to warn the public about this, it's not being looked at seriously. That's why I'm very, very pleased today to be here to testify to you and to take some of these things very seriously and to have a respectful analysis of this potential threat.

This Commission is fully aware of China's military buildup, its brutal repression of religious practitioners, its theft of our most deadly military technology and our economic technology, its flaunting of basic intellectual property rights and its friendly relations with other dictatorships and groups of nefarious characters around the world. Whether they're in North Korea, Iran, Sudan, Burma or, as I say, any other rogue regimes that are around, you will find China somewhere in the background.

The Commission is also aware of China's spread of nuclear weapons technology to Pakistan and to North Korea. So we have that type of proliferation, which is, of course, an enormous threat, not only in terms of proliferation, but the nuclear program is a specific threat to Japan and Taiwan. And, of course, with the buildup of its nuclear capabilities, we also have destabilizing territorial claims against democracies such as India and the Philippines, not to mention Russia, which of course may or may not be on a path to democracy. But you have incredible land claims being pushed now by the Communist Chinese regime.

Couple that with their military expansion and their activities to gain influence throughout the world, and this makes those territorial claims and the claims to South China Sea, et cetera, a huge threat to the peace of the world.

You also know about China's disturbing method, of course, of purchasing oil around the world, outbidding our private companies, and then controlling the oil and the energy sources of the country at the wellhead. But the American people and this Commission have heard little about this threat.

Much less has there been any type of challenge to this what I consider to be a real display of arrogance and power on the part of the Communist Party of China. So why is it that our nation keeps ignoring these hard cold facts? Why is it that there is a very real threat and something that is demonstrably evil forming just right over the

horizon, why is it being ignored?

The question is no longer whether or not the People's Republic of China is undergoing a military buildup and whether its economic growth is threatening to the world. It's clear that this massive increase and influence in power in the mainland of China is going to alter the world we live in.

The real question is, "How do we identify those mechanisms by which the Communist Party has been operating its successful campaign of perception management a campaign aimed at preventing us from realizing what a threat is developing, as I say, just over the horizon?"

We must ask ourselves, why are our think tanks, newspapers and intelligence community keeping the lid on this? Is it because there's some sort of infiltration? Is it just wishful thinking? Why is it that if there is a huge threat that's developing that could be ten years down the road, (we ignored the fascist development in the 1920s and '30s until there was an invasion of Poland) that we're ignoring the development of a huge threat to the world until it becomes unmanageable and destroys the world we live in?

Before Constantine Menges, a very close friend who worked with me in the White House for seven years, he died, he wrote a book entitled China: The Gathering Threat. In it, he predicted global domination by the People's Republic of China unless the United States recognized the threat and quickly we began to respond to it.

Let me note, though, when I came into the White House, the Soviet Union was a huge global threat to anybody who believed in democracy and believed in those values that we hold dear as a nation. Constantine Menges was one of those people who helped us destroy and eliminate that threat to the world and to all of our generations. And Constantine saw very clearly that China was developing as that same type of threat in the future.

As our nation wages war on radical Islamic terror, the threat that we face from the People's Republic of China goes unrecognized and unchecked. Simultaneously, NATO is now disintegrating and it cannot be relied upon to help us counter the rapidly expanding threat of tyranny and the global power of China.

A new alliance is needed to secure the peace and freedom of the world in the decades ahead. The United States Congress can and should play a leading role in exploring the potential for cooperation with like-minded parliamentarians from India, Japan, and Russia.

It is fitting that the talks about the future security of our country be tied to an alliance that begins with legislative bodies. These are the nations whose legislative bodies we could put together because they are the nations that confront this power more than other nations.

I propose that a conference be chaired by your Commission and

perhaps presided over by Speaker Pelosi to be held in the Capitol of the United States. The symbolism would be an inspiring addition to Ms. Pelosi's leadership on the China issue, and I've worked with the new Speaker of the House on numerous occasions in the past dealing with just these types of human rights issues dealing with China.

So I believe that it would be very fitting to have her play a leading role and for the Congress and the legislative branch to get together and to discuss the potential threat and to perhaps lead the way in developing a plan of how we would counter that threat.

Constantine Menges' insights, as I say, helped end the Cold War and his concern about the "gathering storm in China" cannot be understated. Poor Constantine Menges died, as we know, of cancer. It was a great loss to all of us. It's up to us then to step forward to try to find some collective wisdom now that we've lost Constantine's direction, but let's have some collective wisdom. And I would hope that the wisdom and authority of this Commission can actually be put to use to start a process of discussion with Russia, India and Japan that would help us create the new alliance, like NATO was in the past. Such alliance will help preserve the peace and freedom of the world so that our children can live in a more prosperous and peaceful world.

Thank you very much.  
[The statement follows:]

**Prepared Statement of Dana Rohrabacher  
A U.S. Representative from the State of California**

Thank you for inviting me here today to address the commission regarding China's Military Modernization and its Impact on the United States and the Asia-Pacific. I believe that the Chinese government has embarked on a well orchestrated campaign to put China on the path to global domination. We are feeling the results of this successful effort as we run into road blocks to U.S. foreign policy in Iran, Sudan, Venezuela, North Korea, Kazakhstan, Burma and elsewhere.

I held a hearing last Congress on China's influence on U.S. foreign policy through U.S. educational institutions, multilateral organizations and corporate America. I believe that the single largest long term threat to the United States is the attempt by the Chinese Communist Party to regain what it believes to be China's lost status as the most powerful military and economic country in the world. It is successfully accomplishing this goal through a successful perception management campaign.

Under the leadership of the CCP China's billion people have been educated to hate America and because we are they believe stopping them from achieving their rightful power and influence. Unfortunately when western academics or policy makers warn of the impending danger they are ridiculed and isolated by American business, media and educational institutions.

This commission is fully aware of China's military buildup, its brutal repression of religious practitioners, its theft of some of our most deadly military technology, its flaunting violation of intellectual property rights, and its friendly relations with North Korea, Iran, Sudan, Burma and other rouge regimes. The commission is also aware of China's spread of nuclear weapons technology to Pakistan and North Korea, its threats against democratic Japan, and Taiwan and its destabilizing territorial claims against democracies such as India and the Philippines not to mention Russia which may or may not be on the road to democracy. You also know about China's disturbing method of purchasing oil around the world by outbidding private companies and then by controlling the oil at the wellhead. But the American people and

this commission have heard little about why these threatening displays of arrogance and power are going unchallenged. Why is it that our nation keeps ignoring the hard cold fact that China's dictators have some very real evil and devious goals?

The question is no longer whether or not the PRC's military buildup and economic growth is threatening to the free world. The real question is how do we identify the mechanisms by which the CCP has been operating its successful perception management campaign which facilitates its goal to gather more and more power and neutralize its enemies? We must ask how have our think tanks, newspapers and intelligence community been infiltrated and 'turned'?

Before Constantine Menges died he wrote a book titled, China: The Gathering Threat. In it he predicted global domination by the People's Republic of China unless the United States recognized the threat and quickly began to respond to it.

As our nation wages war on Islamic terror the threat that we face from the PRC goes unrecognized and unchecked. Simultaneously, NATO is disintegrating and cannot be relied upon to help us counter the rapidly expanding threat of a tyrannical and globally powerful China.

A new alliance needs to be forged to secure the peace and freedom of the world in the decades ahead. The U.S. Congress can and should play a leading role by exploring the potential for cooperation with like-minded parliamentarians in India, Japan and Russia. It is fitting that talk about a future security alliance begins in the legislative bodies of these nations.

I propose that a conference chaired by your Commission and perhaps presided over by Speaker Pelosi be held here in the Capitol.

The symbolism would be an inspiring addition to her leadership on the China issue underscoring the need to develop a strategy to deal with a powerful and aggressive China, and the severe implications if this responsibility is not met.

Constantine's insights helped end the Cold War. His concern about "the gathering threat of China" cannot be understated. Now it's up to us and the collective wisdom and authority of this Commission can get the process started.

Thank you for permitting me testify today.

HEARING COCHAIR WORTZEL: Thank you, sir. Do you have time for a question?

MR. ROHRABACHER: I have time for a couple of questions.

HEARING COCHAIR WORTZEL: The whole idea of Chinese perception management in the United States is one that I've confronted. On February 6, in this room, I had agreed to be on a panel run by the Carnegie Endowment. The Carnegie staff asked for a biography, and I sent them one that said I was in China during the Tiananmen massacre. A member of Carnegie's staff changed the biography to delete the words "Tiananmen massacre." Instead, the Carnegie staff member changed it to read "Tiananmen student demonstration."

Over a series of emails that went to Carnegie managers, I replied that there were 3,000 people or so killed there. I noted that in the U.S. we can talk about the My Lai massacre, and asked why we can't talk about the Tiananmen Massacre? Eventually I said I will simply not appear unless my biography appears as I wrote it. Eventually, a Carnegie manager directed it appear that way, but with a disclaimer that I had written it that way, not Carnegie.

I later realized that, of course, Carnegie's new program is to put an office in China and to have a Web site in Chinese. And because of

the cooperation of U.S. companies like Google, no Chinese could access their Web site if they had the phrase "Tiananmen massacre" on it associated with that hearing. So it strikes me that this perception management is even extending into the halls of Congress.

MR. ROHRABACHER: Yes, indeed.

HEARING COCHAIR WORTZEL: So how do we respond to that, sir?

MR. ROHRABACHER: Let's note that we have a democratic system here and our democratic process is affected by people who are active within our system. The people who are afraid to be active are not active, and there are a lot of players who are active within the democratic process of the United States who have very parochial interests. —

A lot of things that are dominating these discussions today on China are dominated by people who have an interest in making a fast buck in China.

Businessmen who want to make a 25 percent profit dealing with this dictatorship rather than keeping their companies here in the United States and making a six or seven percent profit. Also it's a lot easier. You only have to pay off one group of people over there. Here you have got to deal with all sorts of things within the democratic process like coastal commissions and environmental restrictions and all sorts of regulations that are established by the democracy that we live in.

So you have businessmen now looking for a fast buck, not caring if it's a bloody dictatorship or even if it poses a threat to the United States in the long run, and they are flooding our system with the resources needed to try to manage the perception of this potential threat. To businessmen, what is a potential threat to America in the long run is a source of enormous profit to them in the short run.

I've seen this in think tanks around the city, and it's embarrassing. I see it in both political parties. I certainly have seen it in the Republican Party where you have these big corporations who say they have to do business in China because their relationship will help China evolve into a more democratic society. In fact, not one businessman who has ever come to me to talk about China has ever spoken to any of the local officials about democracy and about the human rights issues that we're talking about.

I have asked repeatedly and not once has there been a businessman in my office advocating most favored nation status for China, and also able to say that they've had meetings concerning freedom of religion or the repression of some local person's right to do things that we take for granted here in the United States.

So these businessmen, unfortunately, are having a huge impact. They are, with their involvement with China, affecting us. They have

become China's public relations proponents here within our democratic system, and it's very sad because this is the same thing that happened with Neville Chamberlain.

When he got off that plane saying "peace in our times," people don't know that he had been in Germany before. Remember that. He had been in Germany with I think \$1.5 billion worth of investment from England into Germany after Hitler took over thinking that, "well, if we invest in Germany, they won't dare do things that will threaten that investment."

Well, that didn't work. All they did was rebuild the German economy so that they had the resources necessary to build the weapons that led to war. Without liberalization in China, it's the same thing. We're permitting them to have the resources necessary to build their economy. If there is no political reform that goes with that, it will destroy the world we live in.

HEARING COCHAIR WORTZEL: Thank you, sir.

VICE CHAIRMAN BLUMENTHAL: Thank you very much, Congressman. Your proposal of the legislative body in the United States together with other legislative gathering together and perhaps taking the lead in countering a perception management campaign and explaining to the American people the nature of the threat that we face--I'm wondering if that's still possible, given what you've said about influence and perception management campaigns within our own Congress? I'm wondering if you're seeing growing influence campaigns and perception management campaigns aimed at the Congress?

MR. ROHRABACHER: Sure, the fact is with big corporations, the Chinese have got our number. They know where their leverage is: short-term profit. Boeing is the biggest employer in my district and Boeing is setting up an aviation manufacturing operation in China now. Well, then what's going to happen?

We're going to build an aerospace industry for China that ten years from now will put our own aerospace people out of work. Well, the people at Boeing are going to make two or three years of really good profit on that particular operation, I'm sure. The guys who are making the decision, they know they're not even going to be around ten years from now when that will become a horror--not only a military threat, but also an economic threat to the well-being of our country.

And companies, not just Boeing, give a lot of campaign donations to people. They give donations to a lot of people and look what happens? Ten years ago, Hughes Aircraft in my district broke the law and transferred rocket technology to the Communist Chinese.

I did a lot of investigating into that and, quite frankly, I'm the guy who uncovered it. I did a lot of investigating before I turned it

over to the powers that be and they had an official investigation over in the House. But now we see China, with the help of Russia, of course, trying to buy off the alligator before it eats them, using rocket technology, probably our guidance systems, in order to knock a satellite out of the air.

That is an enormous threat to our country even right now. The Chinese were telling us by knocking that satellite out that they can blind us and that they can neuter a great deal of our military strength because almost all of our operations now are based on space-based assets. And, of course, when they knocked that satellite out of the air, they created a debris field which is causing great danger to all of the world.

Now, all of these companies--Loral and Hughes--who went over there. They're not traitors. They're just not thinking things through and they're not willing to make a short-term sacrifice of profit if it means the long-term security interests of their country.

But it's up to us in the government, whether it's the legislative branch or the executive branch, to lead the way. We can't expect the private sector to do it. We're going to have the courage to tell our private sector leaders I'm sorry, you're going to have to forego short-term profit because this is not in the interest of our country in the long term.

HEARING COCHAIR WORTZEL: Thank you very much for your testimony.

**PANEL II (continued): BEIJING'S DOCTRINE ON THE  
CONDUCT OF "IRREGULAR FORMS OF WARFARE"**

HEARING COCHAIR WORTZEL: Dr. Bunker, I appreciate you waiting patiently through the break, but I think this whole discussion in the end is an excellent lead-in to some of the ideas that you have there. Please go right ahead.

**STATEMENT OF DR. ROBERT J. BUNKER  
CEO, COUNTER-OPFOR CORPORATION, CLAREMONT,  
CALIFORNIA**

DR. BUNKER: Thank you for asking me to attend, sir. Some of the main points of my testimony are as follows:

When Unrestricted Warfare is combined with one earlier Chinese classic on warfare, specifically Sun Tzu's The Art of War, Beijing has now been well positioned at least intellectually to flourish in its pursuit of irregular and post-modern forms of warfare. The statement

“the first rule of unrestricted warfare is that there are no rules with nothing forbidden” has caused immense detrimental effects on U.S. views and analyses of Beijing's foreign activities.

Every time Beijing engages in economic, political, cultural, business, media or any other form of foreign activity, we have now been forced to ask ourselves if this is a component of unrestricted warfare. Regardless of the intentionality involved, we now find ourselves in a disruptive targeting situation, much like a deer in the headlights of an oncoming car. We need to respond or create some form of countermeasure to the perceptual trauma this ambiguity is causing us in our strategic analysis of Beijing's foreign activities.

It would be Beijing's best strategy to task special directorates and political groups with actively establishing non-military warfighting doctrines, but to use every form of deception at its disposal to keep the existence of such groups hidden.

This is where a secretive, methodical and strategic opponent, if Beijing is indeed one, would nurture and grow a true unrestricted warfare capability. Whether this gives Beijing's old political guard too much credit is a question for the other panelists with more expertise in that particular area.

The Commission should be chiefly concerned with Beijing standing up special governmental or quasi-governmental directorates that combine outsourced talent into unrestricted warfare teams or working groups. The hiring of this outside talent may be difficult as much of it is currently loyal to the U.S. and our allies. But at the point the Chinese are able to secure it, any of the what-if scenarios posed could then be studied, planned, and implemented in concert with other military and non-military activities as part of the greater strategic plan.

I would suggest a better way of viewing the 2006 QDR threat categories is through a modified diagram which factors in each category--irregular, catastrophic, disruptive and traditional challenges--from the perspective of threat level and time. In the back of my written testimony, I have a picture of the QDR four-square box, and then I've included this one with the threat and time to give you a perspective on how that could be done.

When also viewing Beijing's threat potentials, while it is understood that a sequence of challenges will dominate over time--first traditional, the past; second, irregular, the present; and third, disruptive, the future, with each modified by catastrophic challenges as an additive threat. This would not limit Beijing to utilizing each category in a separate and discrete manner.

Rather, in the cocktail mixes advocated in Unrestricted Warfare, these challenges would be blended and matched in such a way as to

tailor them to the specific situations. And that's why in Figure 2 I have the Beijing cocktails, where you can mix and match those different ways of doing business.

The other note on the diagram that I have there is that I believe we're in this transition from the modern to the post-modern, and historically these transitions have been about 300 years, especially the earlier ones. This one is going to be much shorter in time because of historical compression with technology. I think we're probably looking at a transition here. I'm guessing at this point how long. It could be 50 years, 100 years, but ultimately it's going to be in the near term that the irregular threats are going to be the top challenge. But at some point it's going to be the high technology disruptive threats with the new state forms that are going to cause us issues.

Thank you, gentlemen.  
[The statement follows:]<sup>3</sup>

## **Panel II: Discussion, Questions and Answers**

HEARING COCHAIR WORTZEL: Thank you, sir. I'm glad you mentioned *Unrestricted Warfare* as a book. A lot of China academics have dismissed it because it was written by two colonels, senior colonels, in the General Political Department, but those fellows have been re-interviewed several times since the book came out by the Chinese press, by Jiefangjun Bao, the military newspaper, and it is thinking that absolutely informs military doctrine in China.

We have a number of commissioners that have questions for you. Vice Chairman Blumenthal is the first of those.

VICE CHAIRMAN BLUMENTHAL: Thank you. I have two questions for everyone, but I think more specifically for Dr. Schneider and Mr. Vickers. Dr. Schneider described in a very detailed fashion the anti-access technologies and anti-access investments that are being made. I think there is a growing consensus that over the last two decades, China has made great advances in this area, and from that, we infer that the goal is to, as you said, limit, restrict, constrain U.S. capabilities to continue providing for the security of the region.

Now, about a decade ago, we didn't talk about these threats as much. We talked about China's hollow military and how it couldn't take Taiwan. Obviously, the conversation has changed. The debate has shifted quite a bit.

Now, we're starting to follow Chinese debates about securing supply lines and energy security, and that's what we think the Chinese military is most concerned about. But what are the capability

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<sup>3</sup> [Click here to read the prepared statement of Dr. Robert J. Bunker, CEO, Counter-OPFOR Corporation, Claremont, California](#)

indicators we should be looking for? Mr. Vickers, you mentioned some of the technologies nanotechnology and cognitive sciences and so forth with which they're experimenting.

What are the indicators we are to look for that would give us the possibility to infer that China is making a larger play in the region in terms of going from trying to restrict U.S. operations and U.S. ability to provide security to actually shifting towards the Chinese providing security. In other words, indicators of the Chinese actually being a power capable of projecting force, engaging in coercive diplomacy? Because, if true, that really would be the sine qua non for displacing the United States. So what indicators and when do we know that might be happening?

MR. VICKERS: Military capabilities are rarely purely defensive or offensive. They can be used in different ways. Some of the capabilities that we describe as anti-access, some of them have very specific purposes, for example, to attack surface ships in the littoral. But others could be used to both attack an air base to deny an opponent, the United States, for example, from intervening in a conflict, also can be used to subdue another opponent through strategic attack by large-scale missile barrages.

A missile force can also be used for political and economic coercion or peacetime competition to convince states not to give base access to an ally. How these emerging capabilities would be used over time and for what influence remains to be seen.

In my readings of the Chinese literature, they (the Chinese military) are very, very concerned about energy vulnerability. Rather than expecting them to build, for example, a traditional navy and trying to contest global naval supremacy with the United States--they may go about that in different ways, much as previous countries have.

Sea denial could become a preferred Chinese strategy. If you get into a conflict, you might interdict energy supplies for everybody else and put the problem on us of how do we secure the energy lines of Japan or others as a means of trying to bring a conflict to an end.

Another means--I think it was alluded to earlier--would be, again in a sort of peacetime competition, to try to curry favor with various states by becoming the security and economic partner of choice. Then that is a step, potentially, to the deployment of forces in some of these areas, and there are some very unpleasant thoughts one can imagine, similar to things we did in the Cold War when we were very worried about a conventional balance. We extended nuclear deterrence to allies around the world and said that if the Soviets did anything, they might trigger a response they wouldn't like. Well, possibly some day the Chinese might do that, and then what do you do?

Even if you have an overwhelming conventional capability in the

Middle East or global naval superiority, it may not translate in the same way that you think. And so one certainly hopes that we do not have a strategic competition and conflict with China in the decades ahead, but one thing I think one can say is that it will look very, very different from the Cold War in terms of geography, in terms of the tools that could emerge, and how one might move between sort of initially defensive military capabilities to using them more for offensive purposes.

DR. SCHNEIDER: In terms of indicators, monitoring military exercises is often a constructive way to understand how some of these capabilities might be used, and in monitoring the exercises to see if they integrate some of these irregular capabilities like attacks on the electricity grid of a hypothetical ally or similar kinds of things done in conjunction with more conventional military operations. These will indicate that China is trying to leverage its investment in regular military capabilities with the use of these unconventional or irregular means, and I think that will be constructive.

VICE CHAIRMAN BLUMENTHAL: Thank you.

HEARING COCHAIR WORTZEL: Commissioner Reinsch, Cochairman Reinsch.

HEARING COCHAIR REINSCH: Thank you. First, let me thank, in particular, Dr. Schneider for appearing. We've worked together on some occasions in the past, and I think he's been a wise and thoughtful voice in multiple administrations, both inside and outside the government, in helping the government to do wise things, but probably more important in helping it to avoid doing stupid things, and we thank you for your testimony and for coming. You've been a great public servant and we owe you a debt.

That said, I do have a question for you and, if there's time, another one. You've made a good case, as did several of the witnesses, for China's rapid development of asymmetric capabilities in a number of areas, and I commend to commissioners the part of your testimony you didn't have time to deliver because it goes into some additional areas that you didn't mention.

The obvious question is, given all that, and assuming that you're correct about it, what's the appropriate U.S. response?

DR. SCHNEIDER: The transformation process that U.S. forces have undergone in the past decade has been aimed at dealing with the fact that in the 21st century, it's not going to be possible to optimize a force against an adversary that has specific and known threat characteristics.

So what we need to do is to create a new kind of military force that's able to adapt to a much wider range of potential adversaries. This need to adapt is really a decisive dimension of what has been

fielded over the past several years, especially since 9/11, that will give our military forces the ability to adapt to these kind of threats, for example, cyber attacks on infrastructure, normally not thought of as part of the repertoire of an armed force. But it's quite possible to imagine future adversaries using these kind of attacks.

So the process that's put in place now is, I think, headed in the right direction to deal with this problem. I'd refer you to a recently published study that the Defense Science Board did on an assessment of transformation which engaged some of these issues, which I won't try to conduct here, but it's on the Defense Science Board Web site in the Department of Defense.

HEARING COCHAIR REINSCH: Thank you. We'll get that, I hope.<sup>4</sup> If we go down that road, how will that alter the relationship between the Department of Defense and the high tech business community?

DR. SCHNEIDER: It should help develop a more constructive relationship. One of the limitations on the modernization of the defense establishment is that the sources of technology are shifting from technologies developed inside the defense sector to enabling technologies that are largely developed outside of the defense sector, and coping with these kind of threats. It's not China specific.

These are threats that are derived from capabilities that are extracted from the civil technology base, but put together in a way that they can create a powerful asymmetric or even a military threat. The defense establishment will need a much closer and more cordial relationship with the high tech sector to be able to bring some of these technologies in for the benefit of the national security of the United States and its allies.

So I'm optimistic that this will put us on a path to a more harmonious relationship between the high tech sector and the defense establishment.

HEARING COCHAIR REINSCH: Have you found the high tech industry cooperative thus far?

DR. SCHNEIDER: The way in which the defense industry has been organized gradually over the past ten or so years is: the major players in the defense industry focus on systems engineering and integration and are increasingly acquiring technology from civil sector high tech companies and creating specific military applications.

This process is moving along very rapidly in the information technology sector, and I think we can expect this to be replicated in

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<sup>4</sup> 2006 Defense Science Board Transformation Report Vol1.pdf:

[http://www.acq.osd.mil/dsb/reports/2006-02-DSB\\_SS\\_Transformation\\_Report\\_Vol\\_1.pdf](http://www.acq.osd.mil/dsb/reports/2006-02-DSB_SS_Transformation_Report_Vol_1.pdf)

2006 Defense Science Board Transformation Report Vol2.pdf:

[http://www.acq.osd.mil/dsb/reports/2006-04-DSB\\_SS\\_Transformation\\_Report\\_Vol\\_2.pdf](http://www.acq.osd.mil/dsb/reports/2006-04-DSB_SS_Transformation_Report_Vol_2.pdf)

nanotech and biotech and so forth. So I think there's a process in motion, but it's not fully evolved yet. One of the things that needs to be done is the defense industrial base that the United States depends on needs to be managed in a different way in order to elicit the technology that is now in the civil sector so that it will more routinely and efficiently be able to be transferred to the defense sector.

HEARING COCHAIR REINSCH: Well, that begs the question of how, but my time is up so we'll maybe come back to that.

HEARING COCHAIR WORTZEL: I saw Dr. Bunker nodding his head. To all the panelists, if you want to get involved and respond on some of these issues, please let me know that or let the questioner know that and go ahead, but please, Dr. Bunker.

DR. BUNKER: Thank you, sir. It's a double-edged sword also in terms of our response as we increasingly privatize, outsource, use private security firms, and ultimately mercenary firms for a lot of our capabilities. I'm not concerned about those groups in the short term, but over the course of decades when we have a Blackwater legion out there or something similar, the folks that are manning that group are no longer drawn from our military and law enforcement services, the bond is going to be broken with our state. Ultimately, as seen in the course of history, mercenaries will turn on you if they're not well paid, they're not doing the job as sworn agents of the state.

As we think about some of these responses, we need to make sure that we get a good handle on where this may go. Thank you.

DR. REVERON: Maybe a quick pragmatic solution of what do on issue of satellites is to internationalize them. The U.S. military is more reliant on commercial satellites today than I think satellites we operate ourselves, and so we might look at how do you protect assets you do not own against an attack.

One way to do it would be to harden in some way, against some sort of electronic attack. The other way is to try to change the calculus a bit. I mean as I think it was alluded to throughout, China, is a modernizing country and will develop these same vulnerabilities as the United States, and it will likely become reliant on commercial assets as well. So if you create almost a common commercial system, that it just wouldn't be subject to an attack in that case. This requires a lot of imagination, I realize, but it works with other countries.

HEARING COCHAIR WORTZEL: Commissioner Brookes.

COMMISSIONER BROOKES: Thank you, Mr. Chairman. Thank you all for testifying today. We'll talk a little bit more about this tomorrow, but since we have this august panel here, I thought I would ask this question. It goes a little bit beyond the strategic level to the tactical level. I direct this to Dr. Reveron, but if others have insights, I'd be very interested in them.

Beyond Chinese official media and diplomacy, can you give us any examples or are you aware of active measures that the Chinese are using to shaping international public opinion?

DR. REVERON: I think in general they tend to officially put their behavior in context as not being U.S., and I think one of the kinds of inviolable ideas behind Chinese national interest is respect for sovereignty. So if China is dealing with a country like Sudan, for instance, where the United States has called Darfur genocide, China will defer all discussion of that, and certainly pose their ideas in opposition to the United States.

Another example, for instance, is just having regular commentators. The media is largely controlled by the government, but I think just because of technology you have independent individuals and groups emerging. In my prepared remarks, I gave the example in relationship to when the United States announced the creation of Africa Command last month and there were several commentators that were quoted in the PLA Daily, for instance, and have been putting out this message. And really the creation of Africa Command, according to these commentators, was all about the United States trying to dominate Africa, which I think is just silly, and I think if you look at why the announcement was made, it had more to do with I think smoothing bureaucratic lines and focusing U.S. assistance there.

COMMISSIONER BROOKES: That's still Chinese official media. I'm asking for things that are outside of diplomacy or outside of--and you may not know. That's fine--but active measures: information operations, disinformation operations, misinformation operations, by the Chinese, overseas to advance Chinese interests?

DR. REVERON: I could just point to state examples.

COMMISSIONER BROOKES: Anybody else have any?

DR. SCHNEIDER: Just one point, that the Chinese campaigns for influence abroad are very parallel to the kind of experience that we had in the latter part of the Soviet period in what is now Russia with very sophisticated campaigns using combinations of access to private sector media that are heavily influenced by either remunerative incentives or other techniques to gain influence or the more aggressive use of forged documents, false documents, and that sort of thing.

I think if you study some of the documents from the manner in which the former Soviet Union dealt with the KAL 007 shooting and how they were able to persuade a substantial fraction of the people in the international community that KAL 007 was on a U.S. intelligence mission shows that these techniques are very effective and they do gain some considerable credibility. I think the methods are very parallel.

COMMISSIONER BROOKES: Actually you're saying we're seeing this?

DR. SCHNEIDER: Yes.

COMMISSIONER BROOKES: Mr. Vickers, do you have something to add to that or?

MR. VICKERS: No, I would just underscore that one would expect to see more of that over time, given, you know, expansion of wealth and the trends we see underway of using multiple channels, some of which can be done covertly. And it's fairly benign covert action, but it can have a fairly large effect.

COMMISSIONER FIEDLER: Dr. Schneider, the news recently, actually yesterday, I believe, on ITT and the night vision technology that was apparently knowingly transferring for the purposes of cheaper production, first to Singapore and then ultimately to China, would strike me as damaging. Clearly, they had \$100 million fine.

Have you any idea or would you venture any estimate about how damaging that was to the security of our individual soldiers?

DR. SCHNEIDER: I have only followed the case in the newspaper, but having previously served in the Department of State where I had some responsibility for the arms transfer function, I am familiar in general with the problem, and the very large fine associated with this suggests that the concern was regarded by the U.S. government as a grave problem because it's a very large fine in relation to what is typically done. I also noted that the dimension of the scale of the fine is related to effectively compensatory research and development investment to offset some of these problems.

But it's not likely to entirely mitigate the problem because the underlying theme of American modernization is speed, stealth and precision, speed being the speed of the transaction, which means that the U.S. forces are designed to operate 24/7, day/night, all weather. If the ability of the U.S. forces to operate in an unrestricted manner at night is compromised by either espionage or clandestine disclosures, it slows down the U.S. operating tempo, exposes U.S. forces to being more readily detected and hence becoming targets. So I think that may reflect why such a large fine was meted out in this particular case.

COMMISSIONER FIEDLER: Let me just follow up with that. I'm given to understand that we haven't fixed the problem that was created by the transfer of the technology and that we're asking ITT to help us fix the problem they created?

DR. SCHNEIDER: There are limits to what can be done because the functionality of night vision, once established, gives a substantial advantage to the individuals having it. There was a case during the Vietnam War where a soldier basically I believe lost his life in an effort to protect what was then a first generation night vision equipment because it was seen as such a precious asset to the security of the forces and their ability to carry out their mission.

So there is no doubt it's a grave problem and can't simply be recreated by having better night vision equipment.

HEARING COCHAIR WORTZEL: An Army second lieutenant of the 28th Infantry was actually awarded a Medal of Honor for that act.

DR. SCHNEIDER: Thank you, Mr. Chairman.

COMMISSIONER FIEDLER: I recall that as a Vietnam veteran myself. Do we have any information that the technology was passed by the Chinese to anyone else?

DR. SCHNEIDER: No. At least nothing was shown there, but China has a very high propensity to export these things, not specifically night vision, but dozens of Chinese companies have been sanctioned for nuclear and missile technology transfers to Iran. They provided Pakistan with a full design of a nuclear device that has ultimately been part of the A.Q. Khan's network that has gone into other countries.

So I think the possibility that this technology will wind up in the Chinese export portfolio is high.

COMMISSIONER FIEDLER: So just one final specific question. How long will it take us, do you figure, to fix this so that our troops are at the advantage again?

DR. SCHNEIDER: I don't think it can be fixed simply by better night vision equipment. You have to change the concepts of operation to reduce your vulnerability to an adversary having effective night vision equipment and perhaps accept some loss in military effectiveness in order to maintain the safety of the troops while conducting military operations. So it poses a significant challenge.

COMMISSIONER FIEDLER: So the damage here is not just the cost of what it is to develop new technology but is an operational cost on a day-to-day basis until we regain the advantage?

DR. SCHNEIDER: Right.

MR. VICKERS: Just to add to that, that's true in a number of critical military technology areas. Stealth, for example, that Dr. Schneider mentioned. One doesn't need to have equivalent stealth and then you go to the next generation to pose an operational challenge for an adversary. If you just have good-enough stealth, that can change a balance.

COMMISSIONER FIEDLER: In this case, it's an anti-access question, too. Right? As I understand it, they now know how to counter our night vision. It's not that they can see better than we do; they can just blind us.

DR. SCHNEIDER: Yes, that's right.

HEARING COCHAIR WORTZEL: Thank you very much. Commissioner Esper?

COMMISSIONER ESPER: Thank you, and I want to thank each

of the witnesses here for coming today and for your testimonies. I have a specific question for Dr. Schneider. In your testimony, you talked about the PRC's military modernization, specifically its acquisition plans. Because of the opaqueness of their system it's not clear, at least politically and militarily, where they're going. So what do the acquisition plans of the PLA tell you about their strategy or aims?

DR. SCHNEIDER: We don't have much information about their plans, and so we have to base it on what we see or what we otherwise learn about, and the fact that what they're actually buying creates so many alternative interpretations of what their aims are, that the U.S. government has focused its appeal to China to explain what it's doing with this.

They've published several white papers on defense, but they have generally concealed more than they reveal about China's defense aspirations. So I think as this matter expands over time, because they're substantially increasing their defense investment, over 15 percent per annum, that the response to this question of opacity is going to arise evermore urgently. Absent some clarity in this area, the U.S. and other countries in the region that are concerned about this matter will need to take compensating measures to mitigate the risk posed because of the lack of transparency in their modernization.

COMMISSIONER ESPER: Do any of the other panelists have any views on what these acquisitions may mean in terms of strategy?

Let me ask a second question then because you just mentioned, Dr. Schneider, about compensatory actions on the United States' part, and Mr. Vickers, you mentioned in your testimony, how we need to manage the rise of China. So I ask this question: how do you manage the rise of China? The United States and others can obviously take actions on their own part, but how do we manage that because countries modernize, they have plans and ambitions and goals, they manage their own perceptions as well. How do we manage another country?

What would each of you recommend?

MR. VICKERS: I believe the rise of China is going to be the momentous event of the 21st century and it is going to reshape the world. The question is how and what can we do about that? And sometimes when people talk about shaping behavior, they get very giddy as if you can control another country's rise and you have to be more modest than that. But as Dr. Schneider alluded to, over the course of the Cold War we developed some strategies for long-term competition or interaction, if you prefer that word, that may transcend the limitations within the narrow context of the Cold War.

And that could impact on deterrence of conflict or dissuading

competitions in certain area or a range of things. So, for example, your investment posture versus another side's investment posture can create vulnerabilities that can be exploited.

Failing to take the proper actions can also heighten the risk of conflict.

If your posture, for example, cedes sanctuary to an adversary--that's important when countries possess great strategic depth--this could increase strategic risk. You'd expect rational actors to exploit that in some way.

So thinking about our investments, as actors do, and the way that this affects behavior, does this give them the opportunity to just invest in offensive systems rather than having to worry about defensive, or deal with multifaceted challenges and therefore deter conflict, or ways one can shape behavior?

Some of these disruptive capabilities would likely be closely guarded secrets and so it places a premium on intelligence to try to understand what may be being developed. In cyber war, I alluded earlier to nanotechnology and advances in biotechnology that could have significant impacts down the road, but you're only likely to discover some of those things if you have a pretty good intelligence system.

COMMISSIONER ESPER: Any other thoughts?

DR. SCHNEIDER: Just one footnote to Mr. Vickers' remarks. I think if you compare the case of China and Russia, Russia has much more threatening capabilities to the U.S. than does China at this stage. But however flawed, Russia has democratic institutions and democratic order, and a somewhat transparent process of exposing their defense capabilities and their planning.

And as a consequence, we don't regard Russia as a threat; where, as the Chinese investment, while not yet a threat in that sense, it raises these ambiguities about its aims because of the lack of transparency. So despite these very different sizes of capabilities, China is the one about which questions are raised rather than Russia.

DR. REVERON: I think, in addition, one might simply wait it out. I think much of what explains China's behavior has nothing to do with the international system or the United States, but maintaining domestic order within China. Whether China will stay intact, if that's the right way to put it, I think is still a very open question. But obviously as they grow, we're also concerned about countries that want to have the prestige of having a world-class military, much like we do.

Another thing that is being done, I would say, is co-opting China. It's probably too soon to say the Six Party Talks were successful, depending on how you measure success, but this idea that we hold China to some sort of accountability. They're a part of the

international system, they're a permanent member of the U.N., so hold them accountable to those standards, as I think this Commission has mentioned, certainly with WTO as well as U.N.

From a peacekeeping perspective, I would say rely on them more and get China out there doing more peacekeeping. As a permanent member, they already contribute more than the United States simply because we don't wear the blue beret very often; they contribute 1,800 peacekeepers around the world today. They have a very large standing army. There is much demand for peacekeeping and post-conflict reconstruction around the world. Get them more engaged in the international system, and I think their interests will become more obvious.

Finally, I would say the obviously increased dialogue. I would certainly like to see more Chinese. We don't have any Chinese military officers in the Naval War College; we have one from Taiwan. In talking with a number of people from Pacific Command, and I know they do things that involve China, but increase interactions so we have a better understanding of what their strategy is all about, what their capabilities are, and they can also understand what the United States is about too.

COMMISSIONER ESPER: Thank you, Mr. Chairman.

HEARING COCHAIR WORTZEL: Thank you. Commissioner Shea.

COMMISSIONER SHEA: Thank you, Mr. Chairman, and I just want to echo everyone's comments, thanking you for participating in this hearing this morning.

My question is for Dr. Reveron. You did not mention this in your oral testimony, I don't believe, but the crack Commission staff gave us an article that you co-wrote on perception management and you cite your research analyzing New York Times' coverage of the EP-3 incident in 2001 and how it was affected, you claim, by stories coming out of the Xinhua state news agency in China. You allege that the New York Times coverage of the incident was initially pro-U.S. and then once the Chinese state news agency started putting out its stories, the New York Times coverage shifted to being anti-U.S. and pro-PRC.

Question number one: has the New York Times ever responded to the conclusions drawn in your paper? I'd be curious to hear that.

DR. REVERON: No.

COMMISSIONER SHEA: Secondly, could you go into that a little bit and give us a sense of the linkage between the two? Was the New York Times just an unwitting recipient of, in your view, of Chinese propaganda?

DR. REVERON: No. Thank you for raising the question. Seven minutes is very difficult to provide any substance, and I did send an

electronic version of the article to the Commission that has the data in it, but essentially what we set out to do was to say, "Does China use perception management and what would that actually look like?" Unfortunately, there was a perfect case to test this idea, the collision between the EP-3 and a Chinese fighter in 2001.

It's a perfect case. The New York Times and other media outlets were simply unwitting participants in the process because Xinhua was the only press agency that had any information. One of the points that we try to make in the article is simply that for perception management to work perfectly well, what they're trying to influence can't be too divorced from reality.

I don't know if you read my Baghdad Bob story in the testimony, but if you remember back to 2003 in Operation Iraqi Freedom, you had the Iraqi spokesperson saying "Yes, the Americans are here in Baghdad, but they're committing mass suicide." We could easily reject that because we had an alternative news source, but in the 2001 case, there was no alternative coverage.

It was perfect again from China's perspective because it was a very isolated part of China. There were no Western media reporters there. Even U.S. access was very restricted for the first three days. And so China, I think, very effectively controlled what the facts were and they shifted from what was clearly an accident likely caused by aggressive behavior by a fighter pilot, relative to the EP-3, but they very quickly changed what was an error accident into a violation of Chinese sovereignty. They raised all the other issues in terms of why is the United States even conducting reconnaissance flights in international airspace, and they very effectively controlled the story.

I would say in the global media age, an outlet like Xinhua is readily readable and read simply because people rely on things like Google news service and so on, and it's almost like a wire service in that sense.

HEARING COCHAIR WORTZEL: Dr. Reveron, is that article available electronically? Or anywhere? Because we will make sure that in our record of your testimony, we include a link to that article.

DR. REVERON: I'm not completely sure of the copyright rules.

HEARING COCHAIR WORTZEL: Well, is that on the network at the Navy War College.

DR. REVERON: It was published in the International Journal of Intelligence and Counterintelligence.<sup>5</sup>

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COMMISSIONER SHEA: Thank you very much, Dr. Reveron.

HEARING COCHAIR WORTZEL: Anybody else?  
Commissioner Videnieks.

COMMISSIONER VIDENIEKS: This follows up on Commissioner Esper's question. About the modernization and relative sizes of the budgets, there's been various estimates. An interesting thing I saw in one of the prepared testimonies was use of purchasing power parity of 450 billion (USD). Does that amount include acquisition of weapons from foreigners like Russia or not, because acquisitions on open market are not subject to PPP in my opinion?

DR. REVERON: It was my testimony. I can't answer that. The point I was trying to make was when the U.S. buys weapons, we pay U.S. wages. In a simple example, we buy an assault rifle for about \$1,000. The Chinese buy an assault rifle, it's about \$10, equally effective. In terms of looking at overall numbers, our budget looks ten times greater, but effectively they might be similar.

COMMISSIONER VIDENIEKS: Right. But what proportion of the PRC military budget is acquisition of technology, which frequently they have to get overseas, I mean on the open market, and what proportion would be domestic production and expenses, which could be translated into PPP? That's my underlying question.

And then how does the PRC military budget compare with other countries' budgets? Are they the top five or not? And by service?

DR. REVERON: I can't answer on the R&D question. If you look at the budget by PPP, they're number two.

DR. SCHNEIDER: Also, one way to think of this is rather than get too focused on inputs, which is what budgets are, is to look at outputs, what the budget buys. However you measure it, the scope of the Chinese modernization when looked at from an output perspective is very extensive and is engaged over a broad front. They are simultaneously acquiring new mobile ICBMs, new sea launched ICBMs, new nuclear weapon designs, while they are simultaneously recapitalizing their platforms for their general purpose forces and increasing the investment in human capital in the PLA.

So I think looking at it from an output perspective may in some ways be more informative than trying to calculate how the inputs are measured.

COMMISSIONER VIDENIEKS: Thank you, sir. Any other opinions?

HEARING COCHAIR WORTZEL: Chairman Bartholomew.

CHAIRMAN BARTHOLOMEW: Thank you very much, Commissioner Wortzel. Gentlemen, thank you very much for your testimony today. I'm very sorry that I couldn't be here to hear it. I had to be over at the House Appropriations Committee so I only have

one question, but I very well might come back to you with questions after I've had a chance to really review in-depth.

Dr. Schneider, it's always a pleasure to have you appear before us. You are a military expert. You are an economist. I asked you last time you were here what you think the relationship between the economic strength of a country is and their military strength. We are obviously hearing more and more about how China is building its military strength on the backs of its economic growth, much of which is coming from the United States, so I think I'm going to ask you the question again: what is the relationship between a country's economic strength and its military strength, and is it possible for a country that might be having economic problems or potential economic problems to stay strong militarily?

DR. SCHNEIDER: One of the interesting consequences of the way technology applied to military purposes is moving is that the costs of these technologies is declining. As a consequence, we see some of the poorest countries on earth are acquiring some of the most destructive technologies simply because it's becoming much cheaper to do so. Witness Pakistan and North Korea.

North Korea is one of the few countries in the world that can develop and produce their own submarines, long-range ballistic missiles, space-launched platforms, et cetera. So while the relationship between the private economic development of society and its military powers doesn't have to be highly correlated, there is no doubt that economic development provides many more opportunities for the development of military power.

In the case of China, there's no doubt its profound economic transformation has contributed directly to its ability to maintain this pace of modernization across a broad front of military disciplines in such an effective manner. I think the real difference in the impact of economic prosperity and military modernization is one of scope or scale rather than, say, cherry-picking a few capabilities that you want to have. Then if that's the case, then even very poor countries can manage to acquire a few specialized capabilities if it suits their purposes.

CHAIRMAN BARTHOLOMEW: Mr. Vickers, you look like you want to say something too?

MR. VICKERS: I would. This issue of a relationship between wealth and power and the size of potential competitors is something that one can draw some lessons from history and some implications from looking forward, but the range is pretty wide.

So, for example, in the 20th century, Japan posed a significant military challenge to us, that we would describe in terms that it was, in military terms, at least, something approaching a near pure competitor,

an asymmetric competitor. It had 15 percent of the GDP of the United States, and yet it was able to pose this challenge.

Those long-term trends are making it easier to be disruptive at a decreasing fraction of GDP. The 20th century was a difficult century for us. We never faced a competitor with more than 50 percent of our GDP, including Nazi Germany or the Soviet Union in the best of its days.

If you look at some of the economic forecasts going out, the rise of China and India is expected to remake the world economically. If you look at World Bank forecasts or others—China, India and the U.S. will be the three great economic powers of the world looking out 30 years or so. If we face another country, whether they're a competitor or not, that has greater GDP than the United States, and then some of that can be translated into broad capabilities, it will be a very different situation from what we faced in the 20th century. So that's just something to bear in mind.

CHAIRMAN BARTHOLOMEW: One thing I always like to remind people is as we look at the rise of China and the rise of India is that one of the reasons that we are concerned about the rise of China is the nature of China's government, of course. If it were a democracy, this would be a completely different kind of debate and a different set of concerns.

I have ten seconds left. I want to put one other issue on the table. I think it's very interesting when you talked about how cheap it is essentially for the Chinese to produce assault weapons. If we have an opportunity to revisit this or comments for the record, I would appreciate it. What do you think the impact of low-cost Chinese production of defense equipment is going to mean for potential arms races elsewhere in the world?

If they can produce airplanes, fighter planes, much cheaper than we can--

DR. REVERON: Then I think they'll be exported. I had a student from Pakistan this last term, and when he talked about the Pakistan Navy buying their next generation, or actually next surface ships, they took two approaches. One was to ask the United States and we had offered them old ships for not a very good deal, and then they went to China and then got the latest and greatest technology that they could offer for a good price. So I think there is every expectation that China would continue to export weapons.

DR. BUNKER: That's an excellent question. It's out of my skill set, but I would think maybe there are studies done, if not, or maybe you should commission a study looking at the U.S. and China into the future regarding the cost basis of our fielding a force and the cost basis of their fielding a force. Because as you said, it's the outputs not

the inputs.

CHAIRMAN BARTHOLOMEW: That's a really good idea. Thank you, Dr. Bunker.

HEARING COCHAIR WORTZEL: Commissioner Wessel.

COMMISSIONER WESSEL: Thank you for being here and, Dr. Schneider, good to see you again. It's always great to have you here. I want to follow up on a couple of questions and comments that were made and, Dr. Schneider, you talked about the need to manage our defense industrial base in a different way. I'd be interested in your thoughts about what differences we should implement. How would we approach that in the future?

Also, and I am not an export control expert, but my understanding is we are soon moving beyond deemed export controls as a result of R&D facilities being created by Microsoft, Intel and others. The investments by U.S. companies in indigenous R&D in China, again, are going to be uncontrolled because we are going to be investing there, not transferring the technology, but building their capabilities.

Looking at Intel and at a number of our leading-edge firms, and their R&D capabilities, where do you think that leads us in terms of developing China's capabilities vis-à-vis our own? And again, how might we look at this vis-à-vis our own defense industrial base? What challenges might there be and how should we manage that differently?

DR. SCHNEIDER: Thank you for your generous comments as well as your question. The question is very pertinent. In fact, the Defense Science Board that I have the privilege to chair has two studies. One, actually both of them have just recently been finished. One is on trusted foundries to find out how we are going to be able to maintain access to microprocessors and other electronic components in an environment where the commercial incentives are driving this technology offshore, and we have a parallel study that is now completed on trusted software because there's a similar problem there.

We've already made a decision with respect to radiation hardened devices that we have to basically have a subsidized market segment in order to meet government demands. So this is a sort of a clear and present problem for the Department of Defense as more and more areas of technology have this character, that they become globalized and the economic incentives tend to move it offshore.

This has stimulated a demand for another study that is now underway, led by former Under Secretary of Defense Gansler on the appropriate industrial structure for transformation. The way in which our forces are being transformed means that we need to do something different about the way we manage the defense industrial base.

All of the defense technologies are not produced inside that

defense industrial base. Yet, the way in which the industry has been organized has created very high barriers to entry into the defense market for companies that are not already in it. Chairman Reinsch had earlier raised a question about how this would be accomplished, and this is the point of the study because the Defense Department clearly recognizes that there are already having this problem in information technology, they're likely to have it in nano and biotechnologies, and other emerging technologies.

So some template needs to be created. I don't pretend to have an answer. So folks smarter than I am are working on the problem.

COMMISSIONER WESSEL: But just before others may comment as well, as it relates to R&D investments by some of our cutting-edge companies in China which again may not be controlled by deemed export or other rules, how do you view that at this point?

DR. SCHNEIDER: This is, as far as defense being able to get the technology it needs, we're trying to see if there's an answer to having a specialized market segment that's supported in some way in the United States, that assures that we can get these products in a way that meets our security needs.

So I think that there are at least some concepts that have been subjected to the varying degrees of study that can meet the DoD needs, but it does underscore the fact that the industrial basis on which defense develops and produces the products it needs is clearly in the process of evolution. We need to be alert to ways which can help us, and the Congress is ultimately going to be a key player in determining how this spins out.

COMMISSIONER WESSEL: Mr. Vickers? Any other witnesses?

MR. VICKERS: Yes, just a couple amplifying comments on that. The department has been wrestling with this problem, to my knowledge, for over a decade about how to deal with the sort of strategic export problem in a period of fundamental economic and military change. For instance, whether we allow mergers of companies across the Atlantic or investments here or export this defense technology or not versus basic enabling technologies.

Deputy Secretary Hamre at the time in the late 1990s posed a question: should I worry more about a chip plant that's being built in China today or the sale of this technology that's going or this merger of the company? Which one should I spend my time on? And there was quite a debate about it, but there are a lot of people who are more concerned about the chip plant and what it might portend down the road than current technology.

HEARING COCHAIR WORTZEL: We have time for a second round, and Vice Chairman Blumenthal, you are number one on that list.

VICE CHAIRMAN BLUMENTHAL: OK. I've learned how to

play this game. Mr. Vickers, one of your comments was very intriguing in terms of how we developed--in response to Commissioner Esper's question about managing and shaping and so forth--and you mentioned that we developed certain interactions, competitions in our interactions with the Soviets that obviously were to our advantage and prevailed, whether it was dissuading or deterring, certain competitions, military competitions and so forth.

I think one of the problems is--and it's reflected on this panel and any panel ever discussing China--is we certainly don't have a consensus in even the strategic community about whether or not we're in a competition with China or whether China is a threat. In the Soviet case, obviously by the late 40's, we decided it was a threat, and we had an NSD 68 and you had a number of very smart people working on how to prevail in those competitions.

So we're facing a very different set of circumstances here where we've heard a range of testimony even today about strategies of co-optation versus preparing the ground for competition.

So I wonder when and how do we know that we're in a security competition with China? When and how do we know that China is a threat? Will this country ever come to that consensus? That's speculation, obviously, but your own opinion first and then others as well.

MR. VICKERS: Sure. If you look at the broad grand strategic choices that we have vis-à-vis China and by grand strategy, I mean the integration of economic policy and strategy and security and others it poses a very different challenge from the Cold War. If you say, "China will never be a threat to us, and so therefore my aim, my political and economic strategy, is just to ensure this peaceful rise, but I'm not going to hedge in any security dimension in any way," it could be right and we hope it's right. But you're really taking some potentially high risk there if one looks at history for that strategy to work.

By the same token, the flip side of that, if you said "No, I think I'm very worried about them, and so I'm going to try to bring my economics into line with my security strategy and adopt some form of containment or elsewhere" that may be totally impractical and it may create a result that you don't want. And so really the essence of strategic debate today is, how do you have a security strategy in this globalized open world that we're all participating in, but where you still have to hedge in various ways? And it creates some opportunities as well as risks.

The opportunities come from openness. You know it wasn't just a cakewalk to try to penetrate the Soviet Union and do various things that the containment and the economic strategy brought about, and

occasionally detente actually worked to our advantage in that regard in terms of learning more about them.

Now, again, Dr. Reveron referred to this earlier about what path are we on right now. U.S. strategy is to engage China. It's been for a long time. Congressman Rohrabacher talked about the business view of investing and everything else. All that is true.

The Chinese view, I think, was summarized very, very well, which is "we don't want conflict right now; we want to become stronger and rise." And now again whatever interpretation you put on that and the possibilities that could occur 20 or 30 years down the road, those are the sort of the two courses that we're on.

Now, the problem is: what if one side is wrong? China is, I agree, concerned about domestic order and other issues, and it's not a done deal that they'll be able to hold that together. By the same token, it's not a done deal that the rise will be peaceful and so how you manage that while still hedging and shaping behavior to the extent you can, I think, is critical. Again there will be opportunities for us to do things by our own investments but also in this strategic interaction that we find ourselves in.

VICE CHAIRMAN BLUMENTHAL: So you don't see a moment that we'll of a sudden say this is a threat or not? It's not going to be like the Soviet competition?

MR. VICKERS: You could, but one of the realizations I think of the past couple years or so was the dangers in the protracted Rip Van Winkle scenario where you don't have this crystallizing moment that occurs fairly early and you adjust your course, but rather you see your position eroded over time and the balance has shifted because of your own actions and theirs--without this crystallizing moment. Therefore how do you hedge? That's where you think you're succeeding, but how do you hedge to make sure that the competition doesn't turn in a darker direction 25 years or so? So you may not get that great realization.

DR. BUNKER: You might also be heading into the equivalent of a 19th century power balance world with, you know, Russia and India coming into play here as another element that you're going to have to sort out when you look at these relations.

DR. REVERON: I don't mean to be glib, but the easy answer would be Taiwan declares independence, China launches a missile strike against Taiwan, then you would know you're in a war potentially. What does it look like before that? I would add--I don't know who to attribute it to--but the strategy right now is hug them and hedge; hug them in the sense of economic cooperation and diplomatic and so on, hedge on these technologies, understand what their technology trends are and ensure that we stay ahead of those. There is no consensus on this question of competition.

HEARING COCHAIR WORTZEL: Commissioner Reinsch.

HEARING COCHAIR REINSCH: Thank you. Dr. Reveron, in your oral testimony and in your written statement, you talked about Chinese activities to gain favor, if you will, in other parts of the world, the Caribbean and Africa, and you alluded to Zimbabwe as an example of concerns about what their support of dictatorial regimes or other unsatisfactory regimes for any reason is doing to their international reputation.

Can you say a word or two about their policy in Sudan and whether you see any change there because of that?

DR. REVERON: No.

HEARING COCHAIR REINSCH: Okay. Fair enough.

Let me ask you a second question then.

COMMISSIONER FIEDLER: No to their policy or you can't answer?

DR. REVERON: No, I can't answer on Darfur in particular. I would say they haven't been as obstructionist in the U.N. Security Council as I've seen it played in the past.

HEARING COCHAIR REINSCH: As they used to be.

DR. REVERON: As they used to be. I don't know if that's because of an agreement with Sudan that under U.N. Charter they can refuse a peacekeeping presence or not, but their reputation is hurt by actions like this as well. In the testimony I do allude in the Zimbabwe case that China is very different from the Soviet Union. They're not out promoting ideology; they're engaged in some pretty tough business practices.

In the case of Zimbabwe, Mugabe's government couldn't live up to their end of the bargain and so the Chinese companies just cut it off. So it's a very different sort of mind set.

HEARING COCHAIR REINSCH: Let me switch gears then if I may in the remaining time and go back to something you said in one of your answers to somebody's previous question when you were talking about satellites and thinking out of the box. Suggesting that the Chinese might end up developing industry that would be reliant on the commercial sector. And my first thought was that was really brilliant and then I began to think about it some more, and now I'm not so sure. So I want to ask you a question about it.

It is sort of suggesting that perhaps it's in our interest to encourage them to develop the same vulnerabilities that we have, which is a good idea, I think, in the abstract. I guess the question is, is their economy structured in a way to really make that likely?

DR. REVERON: I think so. One story I remember from the Cold War is at some point we signaled to the Soviets, put your missiles underground because by hardening your missiles, that makes deterrence

more stable, and it creates stable relations. What I had in mind along those lines is instead of becoming worried about independent Chinese capability for GPS or communication satellites, you co-opt it in a sense and you do joint projects in a way that you become equally vulnerable in a sense.

HEARING COCHAIR REINSCH: I see. I think I didn't understand fully. Do you think they're likely to bite on that one?

DR. REVERON: I suppose it depends how good the deal is. I mean they need bandwidth as much as we need bandwidth, and so the commercial sector is able to produce bandwidth at a much better rate than governments can.

HEARING COCHAIR REINSCH: I see. So maybe it's sector specific. Mr. Vickers, you want to comment?

MR. VICKERS: Yes. When you look at strategic interactions, symmetries and asymmetries play a very important role--geography, concepts, goals, a range of things. Well, one of them is in the information area and it's driven by certain technological facts and that is bandwidth is a good thing; it's very important. It's very useful for lots of reasons.

But in the competition between space-based bandwidth systems and terrestrial-based, right now terrestrial has won that really hands down. If one posits potential conflict, it's more likely at least the locus of it is going to be in the East Asian littoral for awhile and the United States would find itself having to try to bring its bandwidth with it where essentially information interior lines because of they'll use fiber.

The Chinese, I might add, have also been exporting fiber to some other not so helpful countries as well, making our problem more difficult around the world. So that basic technological issue shapes the behavior in various ways and therefore would shape competition and potential conflict.

HEARING COCHAIR REINSCH: Thank you. Anybody else? Dr. Schneider.

DR. SCHNEIDER: Just on the question of satellites and satellite vulnerability, from the perspective of interest that the Chinese may have in disrupting U.S. communication in time of conflict. It's unlikely that the most efficient way to do that would be to attack communication satellites in geosynchronous orbit. There are more effective ways to attack communication, and so I think it's possible that they, for a variety of reasons, may want to invest in commercial satellites for telecommunications purposes, but I don't think that will have much impact on the military competition.

HEARING COCHAIR REINSCH: Thank you.

HEARING COCHAIR WORTZEL: We will not make it all the

way through a second round, but we do have time for the last question from Commissioner Brookes.

COMMISSIONER BROOKES: Thank you, Mr. Chairman. Dr. Schneider, I guess I'm asking for a clarification and a quick elaboration. Did you say that you believe that the Chinese were involved in the development or building of two aircraft carriers in your statement?

DR. SCHNEIDER: They're going to buy aircraft carriers, and eventually they will develop them, but in the DoD review this year, they took account of the fact that China is going to acquire aircraft carriers.

COMMISSIONER BROOKES: And where are these carriers coming from?

DR. SCHNEIDER: Russia.

COMMISSIONER BROOKES: Russia?

DR. SCHNEIDER: Yes.

COMMISSIONER BROOKES: Okay. And then they're going to develop them from that?

DR. SCHNEIDER: Right.

COMMISSIONER BROOKES: Thank you.

HEARING COCHAIR WORTZEL: Gentlemen, I want to thank all of you for your time, for your very thoughtful testimony and comments, and really for your contributions to the United States and national security. It's been a very rich and robust panel. Thank you.

CHAIRMAN BARTHOLOMEW: And I would just like to join Commissioner Wortzel in thanking you actually for the many years of service that you have all combined given to this country and we look forward to many more discussions with you. Thank you very much.

HEARING COCHAIR WORTZEL: We're going to have to clear the room now. The Commission is going to have a business meeting and lunch and the next panel will be at 1:15 p.m. [Whereupon, at 12:00 noon, the hearing recessed, to reconvene at 1:15 p.m., this same day.]

A F T E R N O O N S E S S I O N

[1:15 p.m.]

**PANEL III: PLA MODERNIZATION IN TRADITIONAL  
WARFARE CAPABILITIES: FORCE INTEGRATION AND FORCE  
PROJECTION**

HEARING COCHAIR WORTZEL: This afternoon's panel is going to examine China's capabilities in the domain of traditional warfare generally. The Commission hopes that the panelists will be able to offer answers to a number of key questions. How capable is the PLA of carrying out integrated or joint military operations? They call them integrated; we call them joint.

How is the PLA improving its power projection capabilities on a global basis? Are they capable of conducting access denial or air and sea control operations around China and further out into the Western Pacific such as the South China Sea and down to the Malacca Strait?

And finally, what ballistic and cruise missile advances have been made by the People's Liberation Army, and how do they challenge the United States?

First, we're honored to have General James Cartwright, Commander of the United States Strategic Command Headquarters at Offutt Air Force Base, Nebraska, with us here today.

General Cartwright is a former Marine aviator with 35 years in the Marine Corps. He was Deputy Commanding General of Marine Forces Atlantic, Commanding General of First Marine Aircraft Wing, Director for Force Structure Resources and Assessments of the Joint Staff. We're very pleased to have you here today. Your command was just great with us when we were out there as a Commission.

We'll also hear from Dr. Andrew Erickson, Assistant Professor of Strategic Studies at the Naval War College in Rhode Island. His Ph.D. from Princeton University was on Chinese aerospace development. He's worked for Science Applications International Corporation and at the American Embassy in Beijing and the U.S. Consulate in Hong Kong.

The third panelist is Cortez Cooper who is the Director of East Asian Studies at Hicks and Associates in Virginia. He has a 20-year military career and was a Branch Chief in the China Division of the Defense Intelligence Agency. He was the China issue manager for the United States Pacific Command and served in the Navy Executive Service as a senior analyst at JICPAC, Joint Intelligence Center Pacific.

He's received an M.A. in Asian Studies from the University of

Hawaii, and has gone to the Armed Forces Staff College and the Defense Language Institute. So I want to thank you again, all of you, very much for being here. We look forward to your remarks. General Cartwright.

**STATEMENT OF GENERAL JAMES E. CARTWRIGHT,  
COMMANDER, U.S. STRATEGIC COMMAND, OFFUTT AIR  
FORCE BASE, NEBRASKA**

GENERAL CARTWRIGHT: Given that the panel has been out at STRATCOM, I'll go pretty light on the organization. But the mission breadth is relatively significant at the Command, in that we have what is called Global Strike which is the global conventional nonkinetic and nuclear capabilities for the nation.

In addition, we have integrated missile defense. The bulk of that discussion generally starts to center around Homeland missile defense and the ground-based interceptors that we're working on fielding. But it also goes out to the regions and starts to get at some of the issues that we're very worried about, which is the proliferation of short and medium-range ballistic missiles and the inevitable time at which people will mate weapons of mass destruction to those weapons because they act so quickly and are so hard to detect and then react to. The time lines and the warning are very short.

We also have intelligence surveillance and reconnaissance as a mission space, and we work very closely with the Director of National Intelligence to take a global perspective on our ISR capabilities.

We have the mission of combating weapons of mass destruction, which is code for what we have called nonproliferation, counter proliferation and consequence management.

I probably left something out in there. I'm sure I did. IO--information operations in the cyber arena. And the attack, the operational preparation of the environment, OPE, and defense in those areas, both layered and internal to the United States where it is applicable to the Department of Defense.

Given that breadth of mission space, we tend to work with the regional combatant commanders--in particular with PACOM--to provide to them global capabilities that help them do the day-to-day interaction with the countries in their region.

We have had a couple of significant challenges and activities over the past year in the Pacific area that involves interaction with China, and so the Fourth of July was a very significant day. In addition to being a holiday in the United States, the North Koreans launched several short-range missiles and attempted to launch a long-range, potentially intercontinental, ballistic missile. That was really

for us the first operational manifestation of integrated missile defense for the country.

While we can talk about North Korea, it did not go unnoticed by the region, and that now has turned into a discussion. On the one hand, what we have is the emergence of credibility of missile defense being part of our 21st deterrent capability. That's manifested in both the acknowledgement by the Chinese and the South Koreans in the region and also the Australians that maybe this is something they want to be part of, both with indigenous capabilities and integrating into the larger capability that we are providing and developing.

The other side of that discussion was what does that mean for China? What does that mean for China's ballistic missiles and the development of ballistic missiles on the part of China? What are the implications and how should they look at that? Is this an arms race? Do they respond with more offensive capability? Do they start to think about a defensive capability? How does this affect their perception of the balance in the region?

That tension was really brought to a fine point by the events of 4 July last year, and I think the panel and the Commission ought to think about the implications there because it will drive how we now try to reestablish a balance out in the Pacific, given the actions of North Korea. And just when you think you've thought it through and you've figured it out, somebody changes their mind. And so I don't know where the Six Party Talks are going to take us now.

But there is a shuffle going on in the Pacific. The potential for the Japanese to have a credible missile defense is significant to their neighbors, but is likely to be perceived as a better alternative than an offensive capability.

The likelihood that the South Koreans would start to invest in a short-range missile defense capability, particularly something that could start to protect their cities, has an effect on the offensive capabilities of their neighbors and what will that be manifested as.

Those are all questions to the region. In addition, we had a test of a possible nuclear weapon by the North Koreans later in the year, and that also sent a warning signal in the region. And everybody in that region is trying to understand how 21st century deterrence will manifest itself. What will be credible? What will have value?

Is it a nuclear weapon? Is it an offensive capability? Is it a defensive capability? What's the right balance? And how do you start to strike that balance and keep it sufficiently agile so that you don't end up playing nine-year-old soccer where every time the ball moves, everybody moves to the ball and you leave large voids where there ought to be defenders.

Because our adversaries today are so agile, coming up with an

appropriate balance for deterrence is a challenge, and being able to tailor that balance as the world changes is critical in the attributes that we want to have as a deterrent capability.

The addition of the nuclear problem with the test in North Korea clearly brings to point that the potential for countries to have what we are now calling, and forgive the label, but rogue states, causes tension and reaction between the United States and China. In some cases, we can work together to make the region safer. In some cases, we have different interests that cause us to not necessarily be on the same sheet of music, and how do we handle this in that region?

The last piece of significant activity over the past year would be the anti-satellite (ASAT) test. It wasn't a surprise; it was the third in a series. It wasn't like it was a shot in the dark. But I will tell you as a military person that the adjustments they made through those three tests to have a successful third test were good in terms of science, manufacturing and R&D. They were significant and we should take note of that.

They got there very quickly. Now, in '85 we and the Russians were doing these kinds of tests. We, I'll speak for us, not for the Russians, came to the conclusion that direct-ascent ASATs were not a terribly effective way to operate, and I believe that my Russian counterpart kind of came to the same conclusion.

It would be my sense that we could have said that to the Chinese and it wouldn't have changed their action. (a) They needed to find this out on their own and (b) the technologies associated with this test reach far beyond ASAT. This was a part of a step in a direction, but it also was done in the guise of an offensive capability in space, and it had collateral damage effects that I would say maybe the Chinese underestimated, both in the debris side of the equation and in the international reaction to the activity.

But it has been done. The damage that has been done in the environment is damage that we'll have to deal with over the next at least 20 to 30 years, as that debris migrates down through the Long Earth Orbit Belt (LEO) and then eventually burns up in the atmosphere when it reenters.

We in 1985 conducted our last ASAT test. The difference between the two tests during the test there were a lot less assets in space, but our tests were at the bottom of the atmosphere and were done on a descending trajectory rather than an ascending trajectory. So the debris basically went back down to the atmosphere.

Having said that, we shouldn't kid ourselves here. It took 20 years even at the lower end of the belt for our debris to deorbit. So whenever you're talking about your adversary make sure you carry a mirror. We have been here. We have done much of the same, but it

was impressive how quickly they got to the capability.

It should be a wake-up call to others that they are building what I would call a continuum of capability in space, all the way from low end temporary and reversible effects through kinetic effects through potentially nuclear capabilities. What is of note here is at the low end, they are not just looking at these and developing them, they have fielded a broad range of jamming anti-satellite type capabilities, position navigation and timing, and also ISR type capabilities, and they have proliferated them out in their forces to be routinized in their training and doctrine.

The last piece that I'll touch is the cyber side of the equation. First, from our standpoint as a command, STRATCOM, the initial challenge here was to understand how to think about this medium of cyber, how to bring it into--for the military--a military construct. What we tend to do on the negative side oftentimes is when we have something new, space, cyber, we put a group together, we compartmentalize them, we give it a whole new vocabulary so that it looks important. And what we've done is make sure that we cannot think about it in the context of the whole here.

Part of the challenge has been to bring this cyber environment and the Internet and these types of information age technologies into a construct that is more like how we think about military activities.

So integrating and having unity of command between defense, the exploitation side of the equation and offense, was critical but was not by any stretch of the imagination easy. None of these people really wanted to talk to each other. We have over the last year been able to make great progress in that area.

In doing so, without adding resources, we realized significant benefit. I'm a Marine. If you have a defensive perimeter and you have attackers and you send your reconnaissance out to see what's out there and they come back and don't talk to either attack or defense arms. Once you get them to talk to each other, now you can start to realize, okay, something is coming our way, let's prepare ourselves. This is a millisecond world. It's 300 and some odd milliseconds from Baghdad to Seattle, and that's going to out to geosynchronous orbit and back.

This is not a "let's have a negotiation" world given those time lines, but you don't want to so differentiate this understanding that you cannot apply it in the broader sense of deterrence and defense. So we are working very hard.

This area also is not like the Planning Programming and Budgeting System (PPBS) or industrial constructs where we build something for about eight or nine years, field it, and call it legacy before it gets to the fleet. The activities here--a weapon or a virus--are changed by a mere slash. Its character can be changed. This is a

very fast and dynamic environment and understanding how it works and building a defense that senses something on the other side of the earth, races it at the speed of light back to home, reconfigures to be in the appropriate configuration to defend, is a very different kind of command and control. And starting to organize for that and starting to understand it and the kind of people that the services need to recruit and train is significant.

I say that for what STRATCOM and DoD are doing and the nation is doing. Other countries are doing the same thing, and there are other smart people in the world, and they are working these same problems, and to the best of our knowledge, they are having some of the same struggles that we're having from a cultural standpoint. They're having many of the technical problems, but over the past three years for STRATCOM, what we have learned is what I would have said when I started this, that if you asked me to go out and find a good cyber person, I'd probably be looking for someone young, likely they would have a ponytail and gender is not the common indeterminate, mathematician, well educated.

The teams that we have been able to put together don't necessarily follow that description. We generally find our threats in three areas: hackers, unsophisticated, just generally out there trying to figure out how to do something. They have a lot of spare time; industrial, where they're looking to steal in particular intellectual capital and sometimes criminal activities in the network; and then a long distance between those two to nation state capabilities.

The differentiation is the amount of resource that's available to educate and organize the individuals. When you get to the nation state level, it is not generally broken down by age. That doesn't seem to be a large discriminator although I would tell you at my age, many times being comfortable in four or five rooms chat rooms simultaneously is a bit of a challenge.

But that does not really seem to be a discriminator in those that you train to operate in the cyber environment. And we see them all the way from, limited formal education a graduate degree involved, but then after that, it tends to cover the whole waterfront. And it's very interesting to see these groups and how they interact. We have built teams, and that is one thing that we have found as we build interdisciplinary teams to work in this environment.

The Chinese are putting a lot of resources into this activity. They are organizing themselves. It is clear. They do that in their open press and their open writings. If you just apply what we've learned to the potential of what you can see in their activity, they've applied resource, they've applied education, they are going at this in a disciplined way. They have a long-term view, not a short-term view,

in this activity and it will pay off with persistence if they stick with this.

We should take note of that and be ready to understand the implications of that type of activity. I will leave it at that. I'm open to your questions, and we can go in any direction that you want when we get to the Q&A part.

HEARING COCHAIR WORTZEL: Thank you, General, and I take it you're to stay for a bit through the Q&A?

GENERAL CARTWRIGHT: I will stay with you as long as you want.

HEARING COCHAIR WORTZEL: That's great. Thank you very much. Dr. Erickson.

**STATEMENT OF DR. ANDREW S. ERICKSON  
ASSISTANT PROFESSOR, CHINA MARITIME STUDIES  
INSTITUTE, STRATEGIC RESEARCH DEPARTMENT, U.S.  
NAVAL WAR COLLEGE, NEWPORT, RHODE ISLAND**

DR. ERICKSON: Chairman Bartholomew, Vice Chairman Blumenthal, Commissioners Reinsch and Wortzel, thank you very much for this opportunity to discuss with you today the very important topic of China's military modernization.

I must give substantial credit to my fellow scholars at the Naval War College's China Maritime Studies Institute, CMSI, especially Director Lyle Goldstein and Professor William Murray. With your permission, I would like to submit for the record a small amount of our collaborative research concerning China's naval modernization, which draws extensively on Chinese language sources.

Finally, let me emphasize that everything I'm about to say, as you well know, represents my personal opinion as a scholar and should be in no way construed to represent the policy or estimates of the U.S. Naval War College, the U.S. Navy or any other element of the U.S. government.

You asked me to comment on China's ability to conduct joint warfare. There is little doubt that the People's Liberation Army realizes that conducting joint warfare is a critical element of conducting limited local wars under high tech conditions.

The PLA has observed the U.S. closely, particularly in Operations Desert Storm/Desert Shield and Operation Iraqi Freedom, and recognizes the need to improve its joint capabilities. The question of how good the PLA is at conducting joint warfare however is difficult to answer. We see some indications that PLA exercises are moving towards jointness, but our research has not yet revealed how successful the PLA has been in actually accomplishing these goals.

There is also no doubt that the PLA is fully committed to being able to dominate the battle space of the littorals around China with an intense focus on the waters and area around Taiwan. Everything the PLA is developing, with the exception of its ICBM force, ballistic missile submarines, and perhaps its nuclear powered submarines and landing platform dock, seems to be devoted to this cause in our estimation.

Some of the PLA's more modern ships and aircraft will allow it to extend its combat power slightly further into the South China Sea and, to a limited extent, into parts of the Western Pacific.

As you know, the PLA Navy is also capable of sending some limited number of warships on occasional trips across oceans. These deployments, however, are severely limited by the limited number of replenishment vessels. While China's shipyards are fully capable of building vessels that could perform those replenishment operations, such ships apparently are not currently being built.

This suggests to us that at least for the time being, China is limiting its military, particularly its naval, focus to matters closer to home.

Thus, China's power projection capabilities seem to be focused on the Taiwan contingency. There is little evidence to show that the PLAN is developing the capabilities necessary to extend its ability to project power, at least as the U.S. would conceive of it, much beyond China's claimed territorial waters and those environs.

Granted, it's important to emphasize that PLAN (PLA Navy) ships carry sophisticated long-range anti-ship cruise missiles, and some of their aircraft can carry land attack cruise missiles as well. Their newest SSNs might be similarly equipped. But the PLAN does not have the capability, in our view, at present to deploy to distant areas and establish a sanctuary on the ocean from which it can conduct military strikes against opposing navies or targets on shore.

The PLA has recognized this overall naval weakness in air defense and surface warfare and has taken impressive steps to overcome these problems. China's three most recent classes of surface combatants all have sophisticated air search and missile guidance radars and also are said to have the advanced long-range surface-to-air missiles to afford these ships a respectable area air defense capability.

Thus, the Luyang II destroyers, hulls 170 and 171, carry the HHQ-9 SAM, the two Luzhou-class destroyers have a marinized SA-20 SAM, and now the five Jiangkai II frigates have vertical launch cells and phased array and guidance radars that strongly suggest a similar capability to us.

China continues to devote substantial efforts to its submarine force. Our book, *China's Future Nuclear Submarine Force*, if you'll

forgive me--just published by Naval Institute Press offers detailed information on this. China does not appear to have made significant progress in correcting its weakness in anti-submarine warfare, however. Although its newer large surface combatants can certainly carry helicopters and might, in fact, carry ASW helicopters, none appear to have modern hull-mounted or towed sonars. There is also little evidence that China is devoting much effort to developing planes equivalent to the U.S. P-3 maritime patrol aircraft.

We have recently completed a two-year-long study of over 1,000 Chinese language articles concerning naval mine warfare. With the help of the Commission it's been distributed outside, and I'd be happy to furnish more copies as well as updates as we continue this research.

Our three most important findings thus far are:

(1) China has a large inventory of naval mines, many of which are obsolete but still deadly, and somewhat more limited numbers of sophisticated modern mines, some of which are optimized to destroy enemy submarines;

(2) We think that China would rely on offensive mining in any Taiwan scenario;

(3) If China were able to employ these mines, and we think that they could, it would greatly hinder operations for an extended time in waters where the mines were thought to have been laid. The obvious means of employing mines are through submarines and surface ships. We believe that the use of civilian assets should not be discounted, but we also see signs of Chinese recognition of the fact that aircraft offer the best means of quickly laying mines in significant quantity.

These aircraft would be useless, however, without air superiority. China's increasingly impressive conventional ballistic missile force and inventory of SAMs and advanced tactical aircraft, in our view, cast real doubts on Taiwan's ability to maintain air superiority over both the Taiwan Strait and even the island itself.

Regarding air-to-air combat, you are certainly aware of China's new J-10 aircraft and of the SU-27, SU-30 and J-11 aircraft programs. China recognizes that dominating the skies over Taiwan is a necessary precondition for successful coercion. These planes, and the weapons they carry, reflect that fact.

Although our group has not yet deeply examined that area, we are impressed by what we have seen thus far.

Every surface warship launched by China in the past decade, with the possible exception of the new LPD, carries sophisticated YJ series anti-ship cruise missiles. These missiles deserve a measure of respect, in our view. It is important to recall that a single Chinese-made C-802 anti-ship cruise missile, which is less capable than China's newer anti-ship cruise missiles, disabled Israel's Hanit Sa'ar 5-class

missile boat in 2006 and killed four of Israel's sailors.

Additionally, the Houbai class, or 2208, wave-piercing catamarans, which are based on an Australian ferry design, are an impressive anti-surface weapons system, high-speed, perhaps 45 knots or so, low-observability, and carrying two or four advanced cruise missiles.

China is building dozens of these vessels at many shipyards simultaneously. Although I am not an expert on surface warfare, I am told that these would be highly effective in attacking surface warships in the waters around China. But their limited endurance would not allow them to operate for extended periods at much greater distances.

Pictures of China's YJ-62, YJ-82 and YJ-83 anti-ship cruise missiles, as well as images of land attack cruise missiles, appear increasingly on the Internet. These missiles, according to *Jane's*, are all long-range, lethal and, most importantly perhaps, indigenously developed. China already has the SS-N-27 Klub supersonic anti-ship cruise missile, which it can launch from its eight newest Kilo submarines, and the formidable SS-N-22 Sunburn supersonic missile that it can and has fired from its four Sovremenny class destroyers.

China is also thought to be in the process of developing anti-ship homing warheads for its ballistic missiles, which is a very worrisome development, in our view. If they work, they would be extremely difficult to defend against.

As for improvements in C4ISR capabilities, the PLA's obvious reliance on long-range cruise and ballistic missile systems strongly suggests that its leaders recognize the importance of robust C4ISR. One must assume that they have programs in place to overcome, or at least significantly offset, this traditional weakness.

We have not yet performed dedicated research in this area, but it is certainly on our list of subjects to examine as we go forward.

Thank you very much for your time and I welcome your questions and comments.

[The statement follows:]

**Prepared Statement of Dr. Andrew S. Erickson  
Assistant Professor, China Maritime Studies Institute, Strategic  
Research Department, U.S. Naval War College, Newport, Rhode  
Island**

Chairman Bartholomew, Vice Chairman Blumenthal, Commissioners Reinsch and Wortzel, Commissioners, thank you for this opportunity to discuss the important topic of China's military modernization with you today. I must give substantial credit to my fellow scholars at the Naval War College's China Maritime Studies Institute (CMSI), especially Director Lyle Goldstein and Professor William Murray. With your permission, I would like to submit for the record some of our collaborative research concerning China's naval modernization, which draws extensively on Chinese-language sources.

Finally, let me emphasize that everything I am about to say represents my personal opinion as a scholar, and should in no way be construed to represent the policy or estimates of the Naval War College, the U.S. Navy, or any other element of the U.S. Government.

You asked me to comment on China's ability to conduct joint warfare. There is little doubt that the People's Liberation Army (PLA) realizes that conducting joint warfare is a critical element of conducting limited local war under high tech conditions. The PLA has observed the U.S. closely, particularly in Operations Desert Storm/Desert Shield and Operation Iraqi Freedom, and recognizes the need to improve its joint capabilities. The question of how good the PLA is at conducting joint warfare, however, is difficult to answer. We see some indications that PLA exercises are moving towards jointness, but our research has not yet revealed how successful the PLA has been in actually accomplishing its goals.

There is no doubt that the PLA is fully committed to being able to dominate the battlespace of the littorals around China, with an intense focus on the waters and air around Taiwan. Everything the PLA is developing, with the exception of its ICBM force, ballistic missile submarines (SSBNs), and perhaps its nuclear-powered submarines (SSNs) and landing platform dock (LPD), seems to be devoted to this cause. Some of the PLA's more modern ships and aircraft will allow it to extend its combat power slightly further, into the South China Sea, and to a limited extent, into parts of the Western Pacific. As you know, the PLA Navy (PLAN) is also capable of sending some limited numbers of warships on occasional trips across oceans. These deployments, however, are severely limited by the limited number of replenishment vessels. While China's shipyards are fully capable of building vessels that could perform those replenishment operations, such ships, apparently, are not being built. This suggests that, at least for the time being, China is limiting its military focus to matters closer to home.

China's power projection capabilities are focused on the Taiwan contingency. There is little evidence to show that the PLAN is developing the capabilities necessary to extend its ability to project power, as the U.S. would conceive of it, much beyond China's claimed territorial waters. Granted, PLAN ships carry sophisticated long range anti-ship cruise missiles (ASCMs), and some of their aircraft can carry land attack cruise missiles (LACMs). Their newest SSNs might be similarly equipped, as well. But, the PLAN does not have the capability to deploy to distant areas and establish a sanctuary on the ocean from which it can conduct military strikes against opposing navies or targets on shore.

China continues to devote substantial effort to its submarine force. Our book, *China's Future Nuclear Submarine Force*, just published by Naval Institute Press, offers detailed information. China does not appear to have made significant progress in correcting its weakness in anti-submarine warfare (ASW), however. Although its newer large surface combatants certainly can carry helicopters, and might carry ASW helicopters, none appear to have modern hull-mounted or towed sonars. There is also little evidence that China is devoting much effort to developing planes equivalent to the U.S. P-3 maritime patrol aircraft. Thus PLAN ASW capabilities, while perhaps slowly improving, cannot yet be counted on to provide a reasonable degree of security in open waters.

Large-deck aviation would likely be needed for the PLAN to truly project power in blue water 'beyond Taiwan.' A small but determined contingent of PLA leaders has long advocated aircraft carrier development. Perhaps because of Beijing's determination to be respected universally as a great power and its growing maritime interests, the PLAN is now apparently contemplating various alternatives for developing aircraft carriers. Increasingly numerous statements and writings on this subject offer critical insights into Beijing's emerging maritime strategy. To date, however, Beijing appears to have devoted more effort to analyzing and developing the ability to target potential enemy carriers than to building its own. Chinese recognition of the increasing vulnerability of carriers, particularly less-sophisticated versions such as China might develop, may thus retard Beijing's indigenous carrier development.

China has already purchased four decommissioned aircraft carriers. China's old carriers, especially *Minsk* and *Kiev*, were probably purchased for dissection to inform future indigenous design. *Varyag*, the largest and most advanced Soviet carrier design, may ultimately also somehow be used as a "test platform" for

general research and China's development of relevant ship-board systems. To this end, *Varyag* may be retrofitted with a power plant, shafts, and screws (which it was said not to have at time of sale to China), so that it can go to sea under its own power. Eventually, a modestly capable *Varyag* might become a centerpiece of PLAN diplomacy, humanitarian operations, and disaster relief. *Varyag*, or even a more advanced PLAN carrier, would have little role in a near-term Taiwan scenario, however, as land-based PLAAF and PLANAF aircraft could cover all required air operations across the narrow Taiwan Strait. Unless China were able to produce and incorporate a range of carriers in a cohesive and effective concept of operations, it is difficult to envision them as the centerpiece of PLAN doctrine in future decades.

Ultimately the aircraft carrier itself is essentially a platform for air operations--the system of systems that allows for the projection of air power from the sea. The acquisition of a PLAN carrier vessel would merely be the first step (together with improvements in hardware, software, and training) toward true operational capability. PLAN aerial power-projection increases hinge on breakthroughs in sea-based aviation, mid-air refueling, PLAN doctrine, ASW, and PLANAF service culture. Without major improvements in ASW, for instance, any PLAN carrier would be vulnerable to submarines.

For the foreseeable future, therefore, any Chinese carrier(s) would most likely: (1) independently conduct humanitarian missions (i.e., disaster relief); or (2) support China's fleet in collective maritime security (e.g., SLOC protection and counter-piracy), and even allow modest force projection to assert Chinese claims in the South China Sea. For these relatively modest purposes, helicopter and other smaller deck aviation platforms are appropriate. We can thus expect China to be flexible in its definition of what constitutes an 'aircraft carrier.'

In the meantime, the PLA has recognized its overall naval weakness in air defense and surface warfare, and has taken impressive steps to overcome those problems. China's three most recent classes of surface combatants all have sophisticated air search and missile guidance radars, and also are said to have the advanced, long range surface-to-air missiles (SAMs) to afford these ships a respectable area air defense capability. Thus, the *Luyang* II destroyers (hulls 170 and 171) carry the HHQ-9 SAM, the two *Luzhou*-class destroyers have a marinized SA-20 SAM, and the now five *Jiangkai* II frigates have vertical launch cells and phased array and guidance radars that strongly suggest a similar capability.

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class, or 2208, wave piercing catamarans (based on an Australian ferry design) are an impressive anti-surface weapons system, employing high speed (perhaps 45 knots or so), low observability, and two or four advanced cruise missiles. China is building dozens of these vessels at many shipyards. Although I am not an expert on surface warfare, I am told that these would be highly effective in attacking surface warships in the waters around China, but their limited endurance would not allow them to operate for extended periods at much greater distances.

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As for improvements in C4ISR capabilities, the PLA's obvious reliance on long-range cruise and ballistic missile systems strongly suggests that its leaders recognize the importance of robust C4ISR. One must assume that they have programs in place to overcome, or at least significantly offset, this traditional weakness. We have not yet performed dedicated research in this area, but it is on our list of subjects to examine.

Thank you very much for your time. I welcome your questions and comments.

HEARING COCHAIR WORTZEL: Thank you, Andrew. Cortez, thank you very much for being here.

**STATEMENT OF CORTEZ A. COOPER III  
DIRECTOR, EAST ASIA STUDIES CENTER, HICKS AND  
ASSOCIATES, McLEAN, VIRGINIA**

MR. COOPER: Thanks, Larry. Let me begin by expressing my appreciation to the chairman and the other distinguished members of the Commission. It's an honor to once again have the opportunity to testify before you here today.

My testimony is going to briefly examine three areas. The first is the People's Liberation Army intent and capability to conduct integrated joint military operations; and I will unpack that term a little bit as we go along.

Secondly, improvements in PLA power projection capabilities, particularly as evidenced in the development of long-range precision strike capabilities.

Finally, the increasing proficiency of PLA units to perform operational tasks specific to fighting a high intensity information-era war in the Western Pacific.

The military component of Chinese national power is rooted in the strategic guidelines governing army building which were promulgated by Jiang Zemin in 1993, and adjusted during subsequent five-year plans. Jiang's military strategic guidelines for the new

period established the role and direction of China's military in responding to post-Cold War realities and the rise of the U.S. as the sole global superpower.

These guidelines also place military developments in the context of a window of opportunity for China to develop comprehensive national power, with particular focus on economic opportunity. According to the Chinese, comprehensive national power development focuses on a strategic objective that represents the basic national interest; and the basic national interest for the Chinese appears to be sustained economic growth with secure control of sovereign territory under, of course, the guiding hand of the Chinese Communist Party.

Beijing's most recently published white paper on defense defines a number of armed forces and armed police objectives to address this basic national interest. These objectives equate to primarily defensive and internally focused missions, but among them is the requirement to deter Taiwan from pursuing a path of permanent independence from the mainland also drives the PLA's pursuit of offensive capabilities.

For China's leaders, this includes a conventional capability to deter and delay U.S. forces that they believe will bolster Taiwan's defense in a conflict. Should deterrence fail, the PLA is expected to conduct one or a number of joint offensive campaigns in a Taiwan war zone or theater.

A couple of terms that I think we need to understand as we talk about building a force to conduct these sort of offensive campaigns are, first, the concept of integrated joint operations and then, secondly, the concept of those operations in what the Chinese call the "informationized warfare" environment.

Informationization at the operational level, which is where I'd like to dwell, appears focused on providing an integrated platform for joint war zone command, control, communications, computer, intelligence, surveillance, and reconnaissance, or C4ISR, connectivity.

Integrated joint operations is the current PLA buzz phrase for training, equipping and sustaining the force to conduct multi-service campaigns controlled by a joint headquarter with that C4ISR integrated C4ISR platform.

An integrated architecture would overcome a major obstacle to joint command and control and could potentially fuse data from ISR assets into a near real time sensor-to-shooter network--potentially giving the PLA capabilities to conduct over-the-horizon precision strikes against both land and maritime targets; kinetic and non-kinetic counter-C4ISR attacks against a technologically capable adversary; air superiority operations; and airborne and air-mobile operations.

Chinese writings emphasize that the success of any campaign hinges largely on the ability to establish and maintain information

dominance and battle space awareness at the outset of a conflict. Over-the-horizon detection and targeting are a significant capability shortfall for the PLA currently. But they will improve greatly as new space-based sensors, long distance air reconnaissance drones, and airborne early warning platforms deploy over the next few years.

The key space system required by Beijing to achieve a more integrated C4ISR architecture is a satellite data relay platform, a system that many analysts of PLA space programs believe could be in orbit within three to five years.

Over the past decade, the PLA has placed a great deal of emphasis on developing airborne warning and control systems. With compatible data link systems on fighter aircraft, ship-borne helicopters, and surface ships. These airborne assets will greatly improve PLA ISR and targeting out to approximately 400 miles from China's coastline, and within range of potential operating areas for U.S. carriers in a Taiwan crisis response scenario.

In order to degrade the C4ISR capabilities of an adversary, PLA strategists are developing the doctrine and fielding the systems to conduct what some of their strategists call integrated network electronic warfare. The components of this integrated electronic warfare include terrestrial and airborne jammers, as General Cartwright mentioned, to include GPS jamming systems; anti-radiation missiles and UAVs such as that purchased from the Israelis, the HARPY system; laser and directed-energy systems; direct ascent anti-satellite weapons, as we've heard; and computer network attack capabilities.

These assets potentially improve the PLA's ability to jam or spoof precision-guided munitions, degrade or destroy air defense radars, and disrupt communication and intelligence networks.

The recent successful test of a Chinese direct-ascent kinetic kill anti-satellite vehicle illustrates that Beijing has the wherewithal to hold critical U.S. C4ISR assets at risk.

Beyond the information war, there are two overarching components in PLA efforts to realize the broader air defense, offensive counter-air, and maritime strike capabilities required for the campaigns they want to conduct: primarily joint blockade, anti-access and island invasion campaigns.

The first is the formation of elite configurations of air and maritime packages to conduct regional air superiority and sea denial operations.

The second is a long-range precision strike capability or strategy, represented by a large array of cruise and ballistic missiles and supported by a variety of sensors.

China's submarine force, as we've already heard, is the key

component in Beijing's sea denial strategy. The PLA has about 28 modern submarines in the fleet, the backbone of which is the Kilo class, which we've heard about--of which Beijing will have, I think, ten in the fleet by the end of this year. China's new indigenously produced nuclear attack submarine, the SHANG class, armed with both anti-ship cruise missiles and land attack cruise missiles, gives the PLA its first non-nuclear global strike capability. The PLA may have more than ten of these operational by the end of next year.

The second component of Beijing's sea denial strategy is the upgraded destroyer and frigate fleet. As Dr. Erickson mentioned, Beijing has quite a few modern destroyers--I think around nine in service, with greatly improved anti-air and anti-ship missile systems.

Of particular note is the Luyang II class destroyer, which has a vertical-launch area air defense system, with a phased-array radar somewhat similar to that of the U.S. Aegis system.

Beijing also has about 17 modern frigates in service which also incorporate much improved air defenses.

The PLA Air Force has both defensive and offensive mandates in support of integrated joint campaign operations. With advanced, increasingly integrated land-based air defenses, the PLA has greatly improved capabilities to conduct its traditional strategic air defense campaign.

The SA-10/20 surface-to-air missile systems purchased from Russia provide the heart of these defenses with powerful radar capabilities and high performance missiles that can range in excess of 100 nautical miles.

The PLA Air Force aspires in the near future to develop capabilities to conduct the offensive air campaign required to gain air superiority over the Strait, support ground forces deployed in the region, and support sea denial operations in adjacent seas.

The SU-30 multi-role and maritime strike aircraft and newer, longer-range strategic SAM systems purchased from Russia provide the capability to conduct offensive operations out to at least 200 kilometers from China's land and sea borders and perhaps beyond when the sea-based air defenses that Dr. Erickson mentioned become more capable over the next five years or so.

The PLA also has made progress in aerial refueling and improved targeting capabilities via UAVs, ship-borne helicopters and over-the-horizon radars. These systems are probably not yet integrated with each other or with space-based detection and tracking systems. Current programs could shore up this weakness within five years.

The conventional arm of China's strategic rocket force, the Second Artillery, is probably the best trained and most ready service arm within the PLA, and it serves a critical role in Beijing's approach

to several key joint campaigns. These forces by doctrine and training are focused on seizing the initiative in offensive operations. The rapid growth of the CSS-6 and 7 short range ballistic missile force and qualitative improvements in missile technologies over the past decade yield a force of approximately 850 missiles providing a precision strike capability.

While the SRBM force serves primarily to address a potential conflict, developments in the conventional medium range and intermediate-range realm pose the possibility of holding at risk all U.S. forward bases in the Western Pacific.

China's program to develop an anti-ship ballistic missile capability is of the gravest concern to U.S. naval forces operating in the Pacific. This future ASBM system could be an integral part of a reconnaissance strike complex able to target naval forces at sea at unprecedented ranges.

U.S. carrier groups responding to a Taiwan crisis may have to operate much further from China's coast to avoid unacceptable risk, making air superiority operations over the Strait increasingly difficult.

China's ground forces have taken a backseat in resource prioritization to air, naval and missile forces, but approximately a third of the force constitutes an increasingly professional war-fighting core. Understanding the requirement to build an amphibious and air-transportable force capable of responding to a call to arms in the Taiwan Strait, PLA force planners have clearly begun to restructure, equip, and train units for specific offensive missions.

Over the course of the past decade, the PLA built at least four major amphibious training bases, and about a quarter of the PLA's maneuver divisions and brigades focus on training for amphibious operations.

The special operations and air mobile capabilities needed in support of missile and air strikes against Taiwan are also priorities for ground force development initiatives.

Strategic lift in the air force is a constraint on airborne power projection at the moment, but Beijing has inked a deal to purchase additional IL-76 transport aircraft from Russia which could increase lift capacity for airborne forces by as much as 150 percent.

The ability of the PLA to integrate new weapon systems, perform new missions and develop the logistic structure to sustain high intensity combat will largely determine whether or not PLA forces can put joint offensive campaigns into operation under complex information-era conditions.

Legacy logistic support for the PLA is stove-piped by service. It's slow and inefficient, but an automated tri-service logistic platform was reportedly introduced recently in a sub-department of the Beijing

military region and a similar platform has also been deployed previously in the Jinan military region. So there are some efforts obviously underfoot to get joint logistics in the pipeline.

In the aftermath of the recent session of China's National People's Congress, Chinese media analysis of PLA plenary sessions heavily stressed the importance that was placed by PLA leaders on training to fight informationized war, with an emphasis on weapon system integration and joint C2 (command and control) and command post procedures and networks.

The effectiveness of PLA training over the next five years will determine the extent to which the force is meeting Beijing's stated modernization goals.

Thanks very much.  
[The statement follows:]

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Let me begin by expressing my appreciation to the Chairman and the other distinguished members of the US-China Economic and Security Review Commission. It is an honor to have the opportunity to testify here today.

My testimony will briefly examine three areas of concern:

- People's Liberation Army (PLA) intent and capability to conduct integrated joint military operations
- Improvements in PLA power projection capabilities; particularly as evidenced in the development of "blue water" and long-range, precision strike capabilities
- Increasing proficiency of PLA units to perform operational tasks specific to fighting a high-intensity, information-era war on China's periphery

**Chinese National Power and Defense Modernization**

The direction of the military component of Chinese national power is rooted in the strategic guidelines governing army building as promulgated by Jiang Zemin in 1993, and adjusted over the course of the last decade during subsequent five-year plans. Jiang's "Military Strategic Guidelines for the New Period" established the role and direction of China's military in responding to post-Cold War realities and the ascendance of the U.S. as the world's sole superpower. These guidelines also placed military developments in the context of a window of opportunity for China to increase its comprehensive national power (CNP), with particular focus on economic opportunity. Developing CNP is a quantitative endeavor for the Chinese, involving a wide variety of factors—encompassing tangible and intangible strength in political, economic, scientific, technological, military, cultural, and educational spheres. National development strategists must consider all elements of power, and resolve fundamental contradictions, in order for balanced development to occur. According to the *Chinese War Mobilization Encyclopedia*, CNP development focused on a "strategic objective" that represents the "basic national interest" will yield

stability and growth. The “basic national interest” for China appears to be sustained economic growth with secure control of sovereign territory (from both internal and external threats)—under, of course, the guiding hand of the Chinese Communist Party.

Based on these fundamental interests, Beijing’s most recent White Paper on defense, *China’s National Defense in 2006*, defines armed forces and armed police objectives as follows:

- Uphold national security and unity, and ensure the interests of national development
- Provide the source of strength for consolidating the rule of the Communist Party... and a solid security guarantee for sustaining this period of strategic opportunity for national development
- Guard against and resist aggression... defend against violation of China’s territorial sea and air space, and borders
- Oppose and contain the separatist forces for Taiwan independence and their activities
- Take precautions against and crack down on terrorism, separatism and extremism in all forms

These objectives highlight the continuing importance of the military and armed police in protecting Party control—which requires capabilities to secure and defend border regions, provide air defense for key political and economic centers, and conduct domestic control and disaster relief operations. The PLA also derives offensive war fighting missions from these objectives, and directs force structure, campaign planning, and training programs accordingly. It is for these offensive missions that the PLA finds itself most in need of modernization and reform. The requirement to deter Taiwan from pursuing a path of permanent independence from the mainland is the central driver for the PLA’s pursuit of offensive capabilities. For China’s leaders, this includes a conventional capability to deter and delay the U.S. forces they believe will bolster Taiwan’s defense in a conflict. Should deterrence fail, the PLA is expected to conduct one or a number of joint offensive campaigns in a Taiwan war zone, depending on the immediate strategic objective. Many of the campaign capabilities required to defeat Taiwan forces, control part or all of the island, and prevent the U.S. from denying China its strategic objectives, will also prepare the PLA to conduct a broader range of offensive operations in potential future regional contingencies.

One of the chief advances in analysis of PLA modernization over the past few years has been deeper access to and understanding of the Chinese doctrinal and strategic military lexicon. From a dissection of the now well-known text, *The Science of Military Strategy*, through more rigorous efforts by PLA watchers to mine a wealth of Chinese writings on doctrine, operational art, and defense programs, analysts have penetrated some of the dense shroud surrounding military modernization priorities, focus and intent. The emerging picture is of a PLA determined to use the current peaceful environment in East Asia to build and train a force capable of fighting and winning a high-intensity, information-era war in the region against a technologically advanced adversary—and to minimize the vulnerability of the political and economic centers along China’s eastern seaboard in such a conflict.

According to the 2006 Defense White Paper, the PLA’s modernization drive is unfolding in three steps. The first step is to establish a “solid foundation” for a modernized force by 2010. Step two is to make “major progress” by 2020. The ultimate goal, to be realized by mid-century, is to field a force capable of winning “informationized wars.” The war fighting core of the PLA will be equipped, task-organized and trained to conduct joint offensive campaigns—such as the joint island landing campaign, the joint firepower campaign, and the joint blockade campaign—requiring regional air superiority, sea control, and information dominance capabilities. China’s defense programs appear on track to deploy and integrate over the next decade the key components needed to conduct these campaigns as doctrinally designed—such as joint command and control systems, long-range surveillance and reconnaissance assets, precision over-the-horizon strike systems, maritime area air defenses, and a real-time, joint targeting architecture.

### **“Informationized Warfare”**

“Informationization” at the operational level appears focused on providing an integrated platform for joint war zone command, control, communications, computer, intelligence, surveillance, and reconnaissance

(C4ISR) connectivity. According to official Chinese media, the 11th Five-Year Plan tasks the PLA Informationization Work Office to move the PLA toward a “perfect universal transmission...and processing platform.” Recent programs to establish integrated joint communications and data transfer capabilities attest to the priority placed on this effort, and China’s information technology sector is certainly capable of providing an effective architecture commensurate with the high level of resource commitment.

One of the primary tasks of conducting “informationized warfare” is to transform traditional modes of mobilization to fit the conditions of modern warfare—the concept of “people’s war” in a new era. For this reason, the modernization and reorganization of militia and reserve forces is to great extent focused on bringing in high-technology qualified reservists and militia members—both to form new high-tech units (such as information and electronic warfare detachments), and to leaven existing or transforming units with more capable engineers and computer technicians. According to a recent *PLA Daily* article, “specialized technical detachments” comprise 41% of reserve units; and the PLA has introduced a number of new reserve units responsible for communications and electronic warfare missions. The urban militia is evolving to provide the war fighting force with high-tech support, providing access to an increasingly tech-savvy workforce.

### **Putting the Pieces Together... Integrated Joint Campaign Operations**

This Commission has over the past few years been briefed on the many foreign-acquired and indigenous missile, naval, and airborne systems that could potentially place at risk U.S. forces responding to a crisis in the Taiwan Strait. But the systems in isolation do not equate to a capability for sustained combat on a modern, multi-dimensional battlefield. “Integrated joint operations” is the current PLA buzz-phrase for training, equipping, and sustaining the force to conduct multi-service operations in an “informationized” environment. While definitions of joint operations differ between Chinese strategists and their American counterparts, integrated joint operations specifically refer to multi-service campaigns controlled by a joint headquarters with an integrated command and control (C2) architecture. Analysts are unsure of the status of this architecture, but PLA and Military Region periodicals run numerous articles referring to tests and experiments involving its components. An integrated architecture would overcome a major obstacle to joint C2 and could potentially fuse data from intelligence, surveillance, and reconnaissance (ISR) assets into a near-real time “sensor-to-shooter” targeting network. As joint C4ISR and targeting systems and processes mature over the next decade, the PLA will be able to bring to bear the modern weapon systems afforded by increased defense spending and ongoing research, development, and acquisition programs. These systems and programs potentially allow the PLA to conduct the operations that underpin the PLA’s joint offensive campaigns—to include over-the-horizon precision strikes against land and maritime targets; kinetic and non-kinetic counter-C4ISR attacks; air superiority operations; and airborne and airmobile operations.

***First Things First: The Information Fight.*** Chinese doctrinal writings emphasize that the success of any campaign hinges largely on the ability to establish and maintain information dominance. This involves deploying and protecting a robust C4ISR capability in the theater of operations, and denying the enemy the use of the electro-magnetic spectrum to command forces and gain information. As previously noted, the PLA has prioritized programs to provide an integrated, joint C4ISR platform that will fuse data from multiple sources. This platform will use both space and terrestrial systems to locate, classify, track, and target enemy forces, and to command and control PLA forces in a variety of frequency bands.

Over-the-horizon detection and targeting are a significant capability shortfall for the PLA, but will improve greatly as new space-based sensors, long distance air reconnaissance drones, and airborne early warning platforms deploy over the next few years. While data link, data relay, and data fusion program details are obviously shrouded in secrecy, it seems likely that systems linking and fusing data between space, air, and terrestrial systems will be available to combat commanders across the force in five to ten years. The key space system required by Beijing to achieve a more integrated architecture is a satellite data relay platform—a system that analysts of PLA space programs believe could be in orbit within three to five

years. China also has programs to develop small satellite systems for rapid launch in a contingency, to provide augmentation for communications and intelligence networks.

Over the past decade, the PLA has placed a great deal of emphasis on developing airborne warning and control systems (AWACS). The PLA Air Force (PLAAF) MAINSTAY system, based on the Russian A-50 aircraft, now provides airborne warning and control with phased-array radar and data link capability. China's indigenous Y-8 turboprop aircraft also has an airborne early warning/C2 variant. With compatible data link systems on fighter aircraft, ship-borne helicopters, and surface ships, these airborne assets will greatly improve PLA ISR and targeting operations offshore—out to approximately 400 nautical miles from China's coast, and within range of potential operating areas for U.S. carriers in a Taiwan crisis response scenario. Reportedly, all PLA Navy (PLAN) destroyers are able to data link with AWACS aircraft, each other, on-board helicopters, and their anti-ship cruise missiles. The extent to which Chinese surface combatants are able to employ these capabilities is unknown—but PLAN publications indicate that naval exercises reflect PLA guidance to prioritize systems integration training.

In order to degrade the C4ISR capabilities of a technologically sophisticated adversary, PLA strategists are developing the doctrine and fielding the systems to conduct “integrated network electronic warfare.” This concept borrows from U.S. theories of net-centric warfare, but is focused more specifically on establishing the conditions to paralyze a technology-dependent adversary and rapidly seize strategic objectives. The components of network electronic warfare include terrestrial and airborne jammers, to include GPS jamming systems; anti-radiation missiles and unmanned aerial vehicles (UAV) such as the Israeli HARPY; laser and directed-energy systems; direct ascent anti-satellite (ASAT) weapons; and computer network attack capabilities. These assets potentially improve the PLA's ability to jam or spoof precision-guided munitions, degrade or destroy air defense radars, and disrupt communication and intelligence networks.

China can already track most satellites with sufficient accuracy for targeting purposes, and has programs to disrupt or destroy overhead sensors. The recent successful test of a Chinese direct-ascent, kinetic kill anti-satellite vehicle illustrates that Beijing has the wherewithal to hold critical U.S. C4ISR assets at risk. China is investing in high energy lasers for a variety of missions including air defense, ASAT operations, and theater missile defense. Radiofrequency weapons, such as a conventional electro-magnetic pulse warhead, would enhance an anti-access strategy designed to slow and confuse a force responding to a regional crisis. Although some of these capabilities are many years from weaponization, the PLA is poised to wage increasingly sophisticated information warfare on a broad scale.

***Improving Air and Maritime Power Projection Capabilities.*** For the campaigns that the PLA expects to wage in the western Pacific, establishing a favorable information environment is the first step toward gaining air and maritime superiority at key times and places. There are two overarching components in PLA efforts to realize the broader air defense, offensive counter-air, and maritime strike capabilities required for joint blockade, anti-access, and island invasion campaigns. The first is the formation of elite configurations of air and maritime packages to conduct regional air superiority, sea denial, and sea control operations. The second is a long-range precision strike strategy, represented by a large array of cruise and ballistic missiles supported by a variety of sensors. The objective of this strategy is to bring together network electronic warfare, space-based and airborne ISR, and advanced missile systems to provide the capability to strike bases on Taiwan, forward U.S. bases in the region, and naval formations at sea.

China's navy is focused on fielding modern destroyers, submarines, cruise missiles, and maritime strike aircraft to deter or prevent an adversary from operating for a given period of time in or above a critical sea lane or maritime zone of maneuver. Even confronting a modern naval foe, China likely can control for long periods of time the waters covered by its land-based air defenses. The PLAN also has the systems to credibly conduct short-term sea denial operations out to about 400 nautical miles from its eastern and southern coastlines—by 2010, with more robust maritime area air defenses, the PLAN may be able to sustain such operations for a few weeks. Obviously, this capability does not accrue to the Straits of Malacca and the Indian Ocean—China can at best hope to “show the flag” for coercive and/or defensive

purposes in those waters until after 2015. Nor would it apply to the blue water of the Western Pacific, particularly if opposed by U.S. or allied naval forces.

China's submarine force is the key component in Beijing's sea denial strategy, and for future extended sea control aspirations. Beijing is concurrently building four classes of submarines, and acquiring another from Russia. China commissioned approximately 17 submarines in the last two years. The PLAN has about 28 modern submarines in the fleet, in addition to a similar number of older boats that continue to require the attention of American commanders in the Pacific theater. The backbone of the modern diesel attack fleet is the Russian KILO class, of which Beijing will have 10 in the fleet by the end of this year. Because China has access to the entire family of Russian CLUB missiles, the new KILO submarines that began arriving in 2005 could have the 300km-range 3M-14 land attack cruise missile (LACM), the 220km-range 3M-54E anti-ship cruise missile (ASCM), and the 91RE1 rocket. This is an extremely lethal weapons suite that allows the KILO to support a number of PLA campaign requirements.

China's new indigenously produced nuclear attack submarine, the SHANG class, benefits greatly from Russian technology and design—it will be armed with both ASCMs and LACMs. The SHANG's range and weaponry will give the PLA its first non-nuclear global strike capability—the PLA may have more than 10 SHANGs operational by the end of next year. The new indigenously produced YUAN class diesel boat may include air-independent propulsion systems that will increase the submerged endurance of the platform. China's older MING and ROMEO submarines remain in service, and likely will continue to do so for some years. They can serve as mine-laying platforms, and can be used to complicate the anti-submarine warfare (ASW) picture.

The second component of Beijing's sea denial strategy is the upgraded destroyer and frigate fleet (about 21 destroyers and 43 frigates). Beijing has purchased four Russian SOVREMENNY destroyers, and is building eight new classes of indigenous destroyers and frigates. China has around nine modern destroyers in service, with greatly improved anti-air and anti-ship missile systems. The LUHAI and LUYANG destroyers are designed to ameliorate the PLAN's most glaring maritime power projection shortfall—ship-borne area air defenses. Of particular note is the LUYANG II class destroyer, which has the vertical-launch HQ-9 area air defense system, with phased-array radar somewhat similar to that of the U.S. AEGIS system. The LUHAI and LUYANG also will have the capability to conduct long-range anti-surface warfare (ASuW) missions with supersonic ASCMs.

Beijing has 17 modern frigates in service, incorporating much-improved air defenses. The JIANGKAI class is noteworthy, as it has a stealthy design similar to the French LAFAYETTE class. China has also introduced a new fast-attack missile platform with a stealthy, catamaran hull design; and is investing in a deep-water mining capability, with a wide variety of applications via varied delivery and activation mechanisms, to include acoustically activated, remote control technology.

To shift from sea denial to sea control operations further from its coastline, China will need to realize success in its aircraft carrier program, increase production of nuclear attack submarines, and integrate space-based and terrestrial command, control, and intelligence architectures. The Chinese do not appear to be pursuing a transition to a carrier navy; but this does not rule out the possibility of a "hybrid" navy that has one or two carrier groups designed to provide minimum blue-water power projection for regional contingencies. Some observers believe that China will indigenously build a 45,000-60,000-ton carrier that could carry 30-40 SU30MKK multi-role fighters—something that the PLAN could probably achieve around 2015.

Command and control, at-sea replenishment, and ASW remain capability shortfalls that plague PLAN efforts to extend its reach. Even for "green water" operations, the PLAN has yet to achieve full integration and automation of fleet command and control systems. The Chinese acquisition of the French TAVITAC system, which is very similar to the U.S. Navy's Link 11 secure tactical data system, will probably allow China to address this shortfall by 2010. To fill the at-sea replenishment gap, two new DAYUN class

supply ships are entering service. The Chinese do not appear to have given a high priority to ASW improvements. Some of their Russian acquisitions, both surface and submarine, have included advanced ASW weapons; but Chinese maritime formations likely will remain highly vulnerable to enemy submarines for at least the next decade.

The PLAAF has both defensive and offensive mandates in support of integrated joint campaign operations. With advanced, layered, and increasingly integrated land-based air defenses, the PLAAF has greatly improved capabilities to conduct its traditional defensive mission, the strategic air defense campaign. The SA10/20 surface-to-air missile (SAM) systems acquired from Russia provide the heart of these defenses, with powerful radar capabilities and high-performance missiles that can range in excess of 100 nautical miles. Extended range missiles are available from Russia and will probably be fielded soon—giving the PLAAF the ability to cover the island of Taiwan from deployment locations near the Chinese coast. The growing, modern PLAAF and PLAN Air Force (PLANAF) indigenous and Russian-produced fighter fleet is capable of supporting the air defense campaign, but is not yet prepared to sustain even regional air superiority operations against a modern adversary.

The PLAAF, however, aspires in the near future to develop capabilities to conduct the offensive air campaign required to gain air superiority over the Taiwan Strait, support ground forces if deployed in the region, and support sea denial and control operations in adjacent seas. The SU-30 multi-role and maritime strike aircraft and newer, longer range strategic SAM systems purchased from Russia provide the capability to conduct temporary offensive operations out to at least 200 KM from China's land and sea borders—and perhaps beyond when sea-based air defenses become more capable over the next five years. The stand-off capabilities of the PLANAF's SU-30MKK2 maritime strike fleet would also benefit if Russia sells Beijing the new 300km-range Kh-59MK ASCM. We have previously discussed Beijing's deployment of airborne early warning systems—the PLAAF also has made progress in aerial refueling and improved targeting capabilities via UAVs, ship-borne helicopters, and over-the-horizon radars. These systems are probably not yet integrated with each other and with space-based detection and tracking systems, but current programs could shore up this weakness within five years. Beijing is purchasing IL-78 refueling tankers, which will refuel the Russian SU-30 aircraft in both PLAAF and PLANAF inventories—giving them reach out into the Sea of Japan, the South China Sea, and to Guam.

***The 2<sup>nd</sup> Artillery: Missile Forces Modernize for Joint Offensive Campaigns.*** The conventional arm of China's strategic rocket force, the 2<sup>nd</sup> Artillery, is probably the best-trained and most ready service arm within the PLA; and serves a critical role in Beijing's approach to several key joint campaigns, including the joint island landing and joint blockade campaigns. These forces are not focused on deterrent or retaliatory missions—by doctrine and training they are focused on seizing the initiative in offensive operations. PLA writings stress that conventional missile forces are most effective in preemptive strikes against high value targets.

The rapid growth of the CSS-6 and CSS-7 short-range ballistic missile (SRBM) force, and qualitative improvements in missile technology over the past ten years, yield a force of approximately 850 missiles providing a precision strike capability. Terminal homing technology and satellite-assisted navigation (using GPS, Russian GLONASS and indigenous Bei Dou satellite navigation systems) make these missiles highly accurate. While the SRBM force serves primarily to address a potential Taiwan conflict, developments in the conventional medium-range and intermediate-range (MRBM/IRBM) realm pose the possibility of holding at risk all U.S. forward bases in the Western Pacific. These missiles, in conjunction with long-range cruise missiles launched from air platforms, provide stand-off capabilities out to Guam.

China's program to develop an anti-ship ballistic missile (ASBM) capability is of greatest concern to U.S. naval forces operating in the Western Pacific. This future ASBM system would be an integral part of a reconnaissance-strike complex able to target naval forces at sea at unprecedented ranges. Chinese writings recognize this as a watershed capability with the potential to change the regional strategic balance. As the Chinese seek to transition from sea denial to sea control operations further from the Chinese coast, an

ASBM capability could prove decisive. U.S. carrier groups responding to a Taiwan crisis may have to operate much further from China's coast to avoid unacceptable risk—ensuring air superiority over the Strait will increasingly involve difficult decisions about the extent to which the U.S. is willing to strike targets on the Chinese mainland. An ASBM capability will be extremely difficult to realize, involving a complex “system of systems” including: C2 infrastructures; space and surface over-the-horizon reconnaissance and targeting systems; real-time targeting data fusion; seeker systems able to track, target, and engage naval platforms at great range; long-range missile systems; advanced maneuverable warhead technology; and a science, technology and industrial sector capable of supporting these systems and technologies. The Chinese, however, appear focused on integrating a mobile, maneuverable re-entry (MaRV) ASBM with a C4ISR architecture increasingly capable of geo-locating targets at sea. If successful, this capability would enhance sea denial operations as much as 1,000 miles from China's eastern seaboard, and facilitate the PLA navy's burgeoning drive to control waters within 300-400 miles of the coast.

Regarding the nuclear arm of the 2<sup>nd</sup> Artillery strategic rocket force, Beijing appears to view modernization as a means to strengthen its traditional role—as a tool to deter nuclear aggression and prevent more powerful states from using strategic capabilities to politically blackmail Beijing. The “nuclear counter-strike campaign” remains the only stated operational mission for the force. While the nuclear force is expected to grow over the next decade, and mobile, solid-fueled missiles will replace older, less survivable systems, there seems to be little indication that China's fundamental nuclear posture is changing to encompass broader nuclear-warfighting constructs. It will be absolutely critical, however, for analysts to closely watch for indications of nuclear armed air- and ground-launched cruise missiles—a development that would have obvious implications for regional stability, strategic deterrence, and escalation control.

To improve the deterrent impact of Beijing's strategy, the PLAN is also modernizing the sea-based nuclear force. China's navy is a strategic force in name only at the moment, but this is changing. A new SSBN, the Type 094 class, should enter service within the next three years. Analysts expect it to be armed with 12 JL-2 ballistic missiles, which could have a range of as much as 12,000km. This would permit attacks on most continental U.S. targets from protected locations close to China's shore.

***Ground Forces: The Forgotten Service?*** As Beijing seeks to rapidly develop niche capabilities to deter Taiwan independence activities, China's ground forces have taken a backseat in resource prioritization to air, naval and missile forces. A significant portion of the ground force remains committed to border, garrison, and key point defense, and to providing the visible extension of Communist Party power throughout the country. Approximately a third of the force, however, constitutes an increasingly professional war fighting core. Understanding the requirement to build an amphibious and air transportable force capable of responding to a call to arms in the Taiwan Strait—and also to have a heavy mobile warfare force for contingency use in Central Asia, the Korean Peninsula, or the Russian Far East—PLA force planners have clearly begun to restructure, equip, and train units for specific offensive missions. The 2006 National Defense White Paper states that, “the Army aims at moving from regional defense to trans-regional mobility, and improving its capabilities in air-ground integrated operations, long-distance maneuvers, rapid assaults and special operations.”

Over the course of the past decade, the PLA built at least four major amphibious training bases, and about one quarter of the PLA's maneuver divisions and brigades focused on training for amphibious operations. The special operations and airmobile capabilities needed in support of missile and air strikes against Taiwan are also priorities for ground force development initiatives. Downsizing or retiring a number of old divisions in favor of modernized, task-organized brigades possibly improves the PLA's capability to respond to potential crises along the full length of China's northern border and tailors some units to more effectively conduct amphibious operations against Taiwan or Taiwan-controlled islands in the Strait.

Recent developments in the helicopter force indicate that the General Staff is well aware of the need for air assault capabilities to address shortfalls in contingency mission areas, such as a landing campaign against

Taiwan or a mechanized campaign on the Korean border, in Siberia, or along China's Central Asian periphery. The force remains small and focused on limited transport capabilities, but the PLA has a coherent, focused plan for transitioning the force to deliver the firepower needed for air assault missions. Strategic lift in the PLAAF is a constraint on airborne power projection at the moment, but Beijing has inked a deal to purchase additional IL-76 transport aircraft, which could increase lift capacity for airborne forces by as much as 150 percent.

### **Training and Logistics: Making Integrated Joint Operations a Reality**

The PLA officer and fledgling NCO corps are largely combat inexperienced—veterans of the Vietnam incursion of 1979 are for the most part gone, and the PLA at the unit level is no longer their army. As such, the ability of the PLA to integrate new weapons systems, perform new missions, and develop the logistics structure to sustain high-intensity combat will largely determine whether or not PLA forces can put joint offensive campaigns into operation under complex information-era conditions.

Logistics is a key area of concern in integrated joint operations—legacy logistics support for the PLA is “stove-piped” by service, slow, and inefficient. However, an automated “tri-service logistic interaction platform” was reportedly introduced recently in a sub-department of the Beijing Military Region (following a similar fielding in the Jinan region). Of particular interest is the fact that the report indicated that the platform was introduced to provide joint logistic support to the “Beijing Theater of Operation,” rather than to the Beijing Military Region—stressing the wartime mission.

In the aftermath of the recent session of China's National People's Congress, Chinese media analysis of PLA plenary sessions heavily stressed the importance placed by PLA leadership on training to fight “informationized” war—with emphasis on weapons system integration, joint C2 and command post procedures and architectures, and electronic warfare capabilities. Most reports on exercise activity do not indicate that PLA units are attempting large-scale joint scenarios. They do paint a picture, however, of a force that is exercising the discrete elements required of certain offensive campaigns; and they indicate that higher-level joint C2 processes are being exercised via simulations and command post training. Of particular note, Chinese open sources have been more openly critical of training shortfalls, and the fixes required—indicating that the PLA is serious about training evaluation procedures and corrective action. The effectiveness of PLA training over the next five years—in terms of new weapons integration, joint C2, and joint firepower operations—will determine the extent to which the force is meeting Beijing's stated modernization goals.

### **Panel III: Discussion, Questions and Answers**

HEARING COCHAIR WORTZEL: Thank you very much. A number of commissioners have questions of you. I appreciate very much your generosity with your time. Vice Chairman Blumenthal is first.

VICE CHAIRMAN BLUMENTHAL: Thank you very much to all of you. A question for General Cartwright and then if I have time for Mr. Cooper and Dr. Erickson.

The spectrum you described that you're seeing right now of cyber abilities and cyber attacks going from hackers all the way down to the use of nation-state resources, what is this type of cyber activity aimed at, at this point? What would you speculate it is going to be aimed at in the future?

Are we looking right now at probes of U.S. systems that later

will be able to take advantage of vulnerabilities or what are we actually thinking the aim is here?

GENERAL CARTWRIGHT: My sense is that there is a substantial amount of reconnaissance going on to understand in our terms "map out", networks, understand who's talking to who, and what means they are using to communicate. And that is broader than just the U.S. government. I mean that is industry for this nation, and so that activity is ongoing.

When you do that type of activity, the opportunity to start to understand where the intellectual capital of a nation is and what it has put together to give you the chance to potentially skip generations in your R&D efforts--and this is not just military--this goes across the commercial sectors, et cetera is usually availed.

For us, we generally think about things in terms of--and I'm talking about military--as a threshold is the law of armed conflict. As long as you're willing to stay below that, you are probing around, you are looking for opportunity, you may stumble across opportunity, probably some of it serendipity when you're talking information operations. In fact, probably a large part of it is, but the idea is to get an understanding of the neighborhood.

The better you understand it, the more likely you are to be able to use that to your advantage should there be a conflict between us..

It may not seem like much to understand just basic rudimentary networks, but it starts to reflect how we think, how we interact and who interacts with who, and understanding that about your adversary is very important. And the speed at which we can understand that about our adversaries today, because of cyber, in comparison to the way we had to do it say in World War II or the Korean conflict for the United States, is vastly different.

You all know what a thumb drive can do in exfiltration in comparison to how many encounters in HUMINT. And so the scale at which you can operate in this environment is pretty significant.

So understanding the patterns and the interrelationships is one level of it. Understanding potentially where intellectual capital might be invested and how you might start to take advantage of that in an asymmetric way is a second thing. The third is to start to understand if we decide to breach through the law of armed conflict, I could then understand how my adversary is going to behave and potentially intercede and make it harder, find his seams, weak spots.

VICE CHAIRMAN BLUMENTHAL: Is a law of armed conflict well developed in cyber warfare? Will you have a very good sense of when it was breached by an adversary?

GENERAL CARTWRIGHT: My feeling is that it is very analogous. In other words, you do not need to go out and develop a

new law of armed conflict for cyber. You have sufficient analogy to other areas of conflict in the kinetic sense that (a) you really don't need to do that; and (b) you may need to do a slight interpretation. But I think it's well documented. It probably is best documented in comparing it to electronic warfare, what's appropriate, what's not.

Even if you don't intend to do harm and collateral damage, if you completely obscure the airspace, you have put at risk civil aviation, et cetera. You have gone through that threshold. It's not unlike that in this environment.

So I think you have good analogy in law and we may need to work a little bit on the nuances, but you have a good basis there.

VICE CHAIRMAN BLUMENTHAL: Thank you.

GENERAL CARTWRIGHT: When the president visited, there was, I guess, two dialogues that were set up. One was for Mike Griffin, my counterpart at NASA, to enter into a dialogue with China on space and that dialogue was to have him, the director, go to China and have an exchange and that did occur.

The second was for the Second Artillery and STRATCOM to have an interaction. We have been in a dialogue to set that interaction up. I would say that one of the issues that the Chinese are trying to work their way through is the organizations don't necessarily match up in mission. So is that the right meeting or should they send someone else? Or should they send more than one, this issue person is something they've been trying to work their way through.

In addition, we went through the Fourth of July. We went through a test in North Korea. We've gone through several events which give us pause--let's wait a little bit here and make sure we understand what's going on.

So we just completed an activity where the Chairman, General Pace, went over and conducted a visit, hopefully to try to stimulate mil-to-mil conversations again. I think they're critical. They're critical from several different approaches.

One is being able to sit down military commander to military commander and understand your adversary and understand whether or not you have a basis in dialogue that you can defuse something very quickly with just a mere conversation, particularly when we have a lot of media that help us interpret what we say.

So sometimes it's quick to pick up the phone, get the opportunity, say, "hey, this is really where I'm coming from, this is what I was trying to do." Right now we are communicating, but it is through the track series of dialogues. These have been extremely valuable, but it is whispering in one person's ear and then to another person's and then back across. It's a very slow way to do business, and it's not terribly efficient.

It's helpful, but it's not efficient. We need to move forward and start to find mil-to-mil dialogues that can start to work through some of the issues. We need to be able to, in particular, start to have a dialogue about ballistic missiles.

What's our intent? Where are we going? How do we find comfort? How do I tell you that I'm uncomfortable with what you're doing? And for you to come back to me and say it's okay, this is where we're heading. If I don't go in the direction I just painted, you ought to be uncomfortable, but if I do, this is where we're going.

Just in the simple launch of a missile, if someone tells you where it was supposed to come from and where it is supposed to go, and you can assess that relatively quickly, it changes the whole dialogue between the two parties.

If the missile is launched and nobody knew it was going to be launched, and you have no idea where it's going, there is a period of ambiguity there that can be very disquieting.

And so I believe this is critical. We can't rush it, but the sooner that we can get a meaningful mil-to-mil dialogue going, the better.

HEARING COCHAIR WORTZEL: Thank you very much. Chairman Bartholomew.

CHAIRMAN BARTHOLOMEW: Thank you. And thank you very much, gentlemen, for your very interesting testimony and also for your service to our nation over the years. It's benefited us all and I always feel that it's a tremendous privilege for us to have people with your experience come and testify before us. So thank you very much.

I have a broader picture question, which is there's obviously a debate going on about what China is, whether it's a strategic competitor, a friend, an ally, and we have defined this question over a number of years, that it's a little uncertain as to what that relationship is. Within our own policy debate, there is no consensus other than China's big and it's growing and it's a country in Asia, and it has a permanent seat on the U.N. Security Council, and after that it all breaks down.

But my question is really about war planning when we don't necessarily have a clear picture of either what we think an outcome in some cases should be and if we don't have a clear picture of Chinese military campaign objectives. So if we're not clear of what we think an outcome should be and we don't have enough information about what they think their military objectives should be or are, how do we plan to counter any of these things?

I'll open that up to all of you.

GENERAL CARTWRIGHT: I think there's a couple of attributes that we can work our way through. We have some basic truths that apply across all of the domains of a desire for access, a desire to be

able to move through any medium, whether it's air, space, cyber, land, and conduct commerce. You know really at the end of the day this nation's greatest national interest is to be able to conduct business.

To the extent that we might be inhibited from doing that would be a reason that we would view with concern activities, which hinder our ability to operate within or through a medium, to go out and discover, do science, or whether it's in the business world, law of the sea, et cetera.

If those areas are denied us, then what are appropriate responses? What plans should we lay in place and to some extent make transparent so that people understand what's important to us, and at what level we place the importance?

If we can do relatively generic planning, couple that with exercises which really then demonstrate the capabilities that we're willing to associate with a certain regret or harm to us, then they can view those, they can see. They can see that if we do this they're going to send an aircraft carrier over.

If they send an aircraft carrier over, that sends a message to us that they're uncomfortable about something. That establishes thresholds. It allows us to plan. If we send an aircraft carrier over, as an example, one aircraft carrier is not going to take on China. But it sends a message. It changes the dynamic.

For us, it starts to expand the warning time, which allows us to seek other venues rather than force to solve the problem. But it increases the credibility of the fact that if we decide to use force, if that's appropriate, that we're already on a path to do that, and the amount of time to do it is now starting to be reduced.

So you try to build scenarios that allow you to communicate in your planning, that communicate and are carried over into your exercises, that let you be relatively transparent about when you're uncomfortable and what conditions make you uncomfortable, and to what extent you're willing to escalate in that situation.

The most difficult part of this equation is when you move to the nuclear end of the equation, and that is why it is so critical to get a dialogue going. For the Soviet Union, when it was the Soviet Union, we had time and we had proximity and we used time and proximity to tell each other when we were uncomfortable. If your submarines got too close to my shoreline, if your bombers were at the end of the runway and loaded and running, those were signals that were very clear and unambiguous. It allowed a dialogue in actions that really facilitated alternative measures to solve the problem.

That to me is the type of planning that we want to be doing, but we want to do it with a mil-to-mil dialogue so there is no misinterpretation of the activity.

CHAIRMAN BARTHOLOMEW: Gentlemen, and our other witnesses, if you have comments, maybe you can put them on the record. General Cartwright, I wanted to mention specifically, though, that one of the reasons I asked this question is because I have heard from some of our young military planners that they believe that they are doing their best to try to come up with plans, but they are uncertain what the ultimate outcomes are supposed to be. They feel like they are flying blind, if you will, in terms of what they're trying to plan for.

GENERAL CARTWRIGHT: Fair. All of us Type As would like to have it written down: "okay, there's exactly what my objective is." We are moving, though, to a strategy that allows us to address ambiguity in a much larger way. The new triad was to accept the fact that one-size-does-not-fit-all for our adversaries.

It also acknowledges the fact that our adversary is looking for our seams, and if we show them strength in one area, they'll move to another. So the same is true of the dialogue. It needs to be flexible enough to communicate at a large level, but acknowledge the fact that maybe it's cyber today and we start to build a little better defense. We don't want to end up in a nine-year-old soccer game where everybody is rushing to the ball and we're leaving huge amounts of the field exposed.

HEARING COCHAIR WORTZEL: Commissioner Brookes.

COMMISSIONER BROOKES: Thank you very much. Thank you all for your testimony today. I'm going to direct these questions, I think, to Dr. Erickson, but if others have input, I'd appreciate it.

I have two questions: One is this morning, one of our witnesses said that it was his belief that the Chinese were pursuing an aircraft carrier program. I didn't hear you mention it and I didn't notice it in your testimony, though I may have missed it. If I did, I apologize. I'd ask for a quick assessment of that.

Also, the SS-N-27, which I guess the NATO name would be Russian Sizzler, or in the Chinese inventory, we're calling it the Klub-- is that correct? Have we done any net assessments on that versus carrier vulnerabilities? And if you could address that in an open forum, I would appreciate your views of that. There has been some discussion recently in the press, addressing some concerns about American aircraft carrier vulnerability to the SS-N-27. Thank you.

DR. ERICKSON: Commissioner Brookes, thank you for those excellent questions. As for your second question, let me request that I be able to furnish an answer to you in writing. I want to make sure I get this straight and stay within the goalposts, if you will.

As to the aircraft carrier issue, I have coauthored a piece with a colleague of mine on this. I think it's a really fascinating issue because it gets to the question of what, if any, are the scenarios

beyond Taiwan? To what extent does China intend to project power into the Western Pacific and beyond?

In the course of doing this research, and I would be happy to furnish you with copies showing the detailed sources we've drawn this from, we've seen a definite interest in this subject. This appears to be under debate in China. What we're also careful to emphasize, however, is that should China pursue such a course, it would have a long way to go in making this a truly effective platform.

In our view, an aircraft carrier is truly a complex system of system, to project air power on the sea. That takes a lot of air expertise. It takes time to practice and master. So we would not be surprised if China were indeed making some significant steps in these directions, but we're just very careful to emphasize that it will take a lot of broad-based effort and would be a major investment for China to actually have an operationally-useful aircraft carrier.

I would not be surprised if, in the years ahead, China does indeed move in this direction, but were a Chinese aircraft carrier to appear in some form in the near future, I don't think that automatically means a strong operational capability. I think it's something we have to look at very closely.

COMMISSIONER BROOKES: I think people were interested in the fact that it may show a change in Chinese strategy in terms one of the purely military modernization as opposed to one of asymmetry, you know, submarines, anti-ship cruise missiles. But I also think there are other opportunities for a Chinese aircraft carrier besides power projection. There's presence. There is the energy security dilemma that they have, the Malacca Strait dilemma as some of them call it, that a carrier could provide that sort of presence. Maybe not our sort of air operations, but maybe VSTOL (Very Short Take Off and Landing) or something along that line, and I guess there was some commentary via the Hong Kong press recently about a Chinese admiral saying something at the National People's Congress, and I was just trying to find out more, since one of our witnesses this morning said it, I was interested.

I realize it's probably something down the road. I don't want to emphasize it too much, but it does show a trend since we have to think beyond the next few years in terms of the Chinese military modernization. So if any of you gentlemen have any comment on that, I'd appreciate it.

MR. COOPER: Just one comment and I think it just echoes what Dr. Erickson said in terms of the difference between putting out potentially one or two carriers over the next ten years, maybe one carrier sometime around or after 2015, and transitioning to a carrier navy--entirely different things. I don't think we have much basis for

seeing a transition plan to a carrier navy in the PLA right now, nor does it seem to fit with what they perceive to be their most immediate threats.

But I think we shouldn't dismiss the program out of hand based on that. I think the idea that having a hybrid navy gets them in the same neighborhood as Thailand, the Indians, in terms of being able to put out a carrier for some use--and again operationally probably not that great for the things that are immediately on their plate, but still quite possible. Then again you have to think of potentially other missions that could be used for a carrier platform, that might involve heli-borne assets and things like that.

COMMISSIONER FIEDLER: Commissioner, could I follow up?

HEARING COCHAIR WORTZEL: General, you're probably the only guy on that panel that's flown off a carrier.

GENERAL CARTWRIGHT: I think he's got it right, but I would watch, if at say 15 years out, it's not one or two, they go into a big--that would be a trip wire.

COMMISSIONER BROOKES: So it depends how you define aircraft carrier. If you talk about helicopters or amphibious assault ships, as opposed to what we think of as an aircraft carrier, 100,000 tons of sovereign U.S. territory. So I guess it also depends how we define it.

Do you have a view as to whether this is a VSTOL or a helicopter program?

DR. ERICKSON: It's hard to find definitive evidence. I would emphasize what you've said about a broad definition of a carrier and a broad definition of operational utility to include presence. I think they would value that.

HEARING COCHAIR WORTZEL: Thanks very much. Commissioner Fiedler.

COMMISSIONER FIEDLER: General Cartwright, I'd like to make a comment or an observation and then ask a question, and if my observation is faulty in any way, I'd like you to correct me on it.

When we talk about conventional weapons and/or power projection, we talk about physical distances, and we've heard testimony about 200 miles, 400 miles, but when we enter the realm of cyber warfare, power projection has a different meaning. Distances are relatively meaningless because anybody can get right to us relatively quickly.

So my question is two parts: (one) is our greatest vulnerability our information systems; and (two), is China our most capable opponent? Or if China is not, who is our most capable opponent?

GENERAL CARTWRIGHT: The first premise, which is the

geographic premise, I think is accurate. It is challenging us on one hand--the fact that you move so quickly and that borders because of these networks, geographic borders, are somewhat irrelevant. But having said that, one has to be careful because if you follow that down, then our laws start to become questionable, which are generally based in property and geography.

So it is a challenge, and the question is can you build analogies so your law remains firm and you can start to build analogy from that.

The issue then becomes, is China the most sophisticated adversary in this environment or capable? Let's put it as capable. If not China, who? Their degree of capability is not clear. I would tell you that the capabilities that are most intriguing are their dedication to, one, bringing this into their military structure; two, building schools all the way through doctrine, et cetera, and plans to be able to use this type of capability in a military context.

Other nations are doing likewise, but I do not believe any have demonstrated the scale or the financial commitment to move in the direction that China has demonstrated. And when I go back to my original statement about what tends to differentiate is how much resource a nation is willing to put at it, that's where I would say China starts to break out of the crowd.

COMMISSIONER FIEDLER: And the time horizon of the development of most weapon systems is in years, conventional weapon systems, whereas the time horizon in developing the offensive capability in cyber warfare is compressed.

GENERAL CARTWRIGHT: Closer to Moore's law.

COMMISSIONER FIEDLER: Yes. And so you didn't quite answer my question about vulnerability. You used the term "challenge," "a great challenge to us." But of all of our vulnerabilities as a nation to our adversaries, is cyber warfare one of our greatest or our greatest or second or third or what?

GENERAL CARTWRIGHT: There's a good debate starting to emerge, and I don't know yet that we understand. But is a cyber attack a weapon of mass destruction? What is the regret factor associated with it, should it be treated in that context? I think people are starting to get their head around this. Industry has certainly already gotten their head around this issue.

I don't think the nation has gotten their head around that issue yet, but I think that we should start to consider that regret factors associated with a cyber attack could, in fact, be in the magnitude of a weapon of mass destruction.

COMMISSIONER FIEDLER: Thank you.

GENERAL CARTWRIGHT: That will cause some noise, but--

HEARING COCHAIR WORTZEL: Gentlemen, we're scheduled

to end at 2:30. I think if you can go five more minutes, I think we can get at least one more commissioner to ask a question.

GENERAL CARTWRIGHT: Yes, sir.

HEARING COCHAIR WORTZEL: So I guess next to Commissioner Shea.

COMMISSIONER SHEA: I have a bunch of questions, but I'll try to get a couple of them in here. Thank you, gentlemen, for coming today. You talked a lot about the modernization of the PRC military and its professionalization. I was wondering if you could give me a sense of the Party control over the military? And my understanding is that the PRC military has become more professionalized over the years, with much greater focus on professionalization, and there's been less emphasis on Party control. And I just was wondering if you had a sense of that, how big an influence the Communist Party plays in PLA and PLAN thinking today?

MR. COOPER: I don't think you can approach that as a zero-sum game. The fact that they are becoming more professional, to then make the leap to say that they will begin to look more like a state army as opposed to a party army. I don't think we can say that. That debate has been going on for a number of years. Folks a lot smarter than myself have weighed in over the past decade in terms of what the likely trends are.

But what I see, and particularly what I see from the last couple of sessions of their Party and People's Congresses, is that the party is certainly worried about that, because you now see that concern in stated mission objectives, at the very top, from Hu Jintao down through the military leaders at each of these sessions in enumerations of PLA missions and objectives--it's right there at the top.

It says that the PLA will ensure that national development continues, and that this is specifically linked to continuance of the Party's control over the country as a whole as primary protector of their sovereignty. So there's obviously concern on the part of the Party that professionalism might take the army away from the traditional modes of Party control.

But I have not seen that happen, and I think that the concern on the part of the Party to ensure that political education continues, and that the power and the interface of the political cadre throughout every level of the army continues, is evidence of continued control. So again, don't equate the professionalism and professionalization, which is certainly ongoing--and some will say that as the nascent NCO corps goes, we'll really be able to tell just where that's headed--but don't equate that necessarily with a loosening of Party control over the apparatus within the PLA. I have not seen that to be the case. In fact, in some areas they have worked to strengthen control all the more.

COMMISSIONER SHEA: In the same vein, I know there's been a lot of speculation, and I think in your written testimony, which I just saw, Mr. Cooper, you address this issue. I'm curious to know whether you think or the gentlemen on the panel have any thoughts on whether the political leadership of the PRC was in the know with respect to the recent ASAT test?

GENERAL CARTWRIGHT: That would have been my comment because I agree exactly with what he said, but then you see this activity associated with the ASAT---where there seems to be a large disconnect, or at least it's perceived because of who indicated they knew and didn't know, that somehow the military got disconnected from senior leadership. What worries me in that case is you have a military organization, if they somehow become disconnected from the political leadership, there are any number of scenarios that would be very worrisome in that kind of a situation. So I say that, but we have not, that's not been unlike we have seen in the former Soviet Union, the United States. Things do happen that don't necessarily get connected. So you have to be careful not to be too literal with this, but that was the one instance I think that gave us all pause was their reaction to the ASAT test when we said, gee, what are you doing and, "oh, nothing."

COMMISSIONER SHEA: Right. Silence.

GENERAL CARTWRIGHT: Yes.

MR. COOPER: Let me address that a little bit and I'll caveat first by saying I have not done a lot of research in the aftermath of the test on this. I think that we have not seen some of the things in the aftermath of this test happen internally in China to indicate that they really were unaware of what was going on—at least to the extent that heads are going to roll within the PLA; there's going to be significant changes to the way they do business based on this.

There have been in the aftermath of events like SARS outbreak, the submarine sinking--we saw evidence afterwards of how the political leadership responded to and dealt with what they saw as being the military being out of the box. Again, some of that could be going on, but I haven't seen a lot of that.

In the case of an actual planned test at that level—with the sort of implications that we're talking about with space debris and other things--to say that the level of foreknowledge was not there or that there was that major disconnect between Party and Army--there may have been disconnects at a variety of levels, but I would find that hard to believe that that would be an indication of the military being out from under the Party's control.

GENERAL CARTWRIGHT: Let's just follow that line--that there is a level of compartmentalization in the government then, and that too

is insightful.

COMMISSIONER SHEA: Thank you.

HEARING COCHAIR WORTZEL: Gentlemen, I want to thank all of you very much for your time. Our next panel is a branch and sequel of this one.

Thank you for your time. Thank you for your attempts to educate us and for your service here. We're going to take about a five minute break and set up the next panel.

[Whereupon, a short recess was taken.]

#### **PANEL IV: THE TAIWAN STRAIT MILITARY BALANCE**

HEARING COCHAIR WORTZEL: The fourth and final panel today will address the Taiwan Strait military balance, and as I said, as I closed the last panel, this is really kind of a follow on of what we think of as traditional warfare and the intersection of what could be disruptive and irregular. So this is kind of the nexus of this QDR problem.

We hope that the panelists will help us address several important questions. How do you assess the military balance in the Taiwan Strait? And how adequate is Taiwan's military capability to meet the threat that the Chinese military poses to the island? These improvements in China's submarine warfare capabilities and force projection and how they affect Taiwan's defensive capabilities? And also the effect of the increasing economic integration between Taiwan and the mainland and how that affects the will on Taiwan and how it views the problem.

We have three very distinguished panelists. The first will be Rear Admiral Eric McVadon. Admiral McVadon is the Director of Asia Pacific Studies at the Institute for Foreign Policy Analysis here in Washington. While he was on active duty in the Navy for 35 years, he was a P-3 naval anti-submarine aviator. He was out in Iceland before he was defense attaché in China.

REAR ADMIRAL McVADON: Iceland.

HEARING COCHAIR WORTZEL: Iceland, and of course, he was our defense and Naval attaché at the American Embassy in Beijing.

Dr. Bernard Cole, Bud Cole, is Professor of International History at the National War College here in Washington. He spent 30 years as a surface warfare officer in the Navy, and he also served as a Plans Officer at the Office of the Commander-in-Chief of the Pacific Fleet, and special assistant to the Chief of Naval Operations for expeditionary Warfare.

He's the author of a number of books on China security, and the most recent was Taiwan Security: History and Prospects. I think it's

an excellent book. I reviewed it in the Army War College Review Parameters this year.

Our third panelist is Mark Cozad. He's the Senior Defense Intelligence Analyst for China in the Directorate for Analysis at the Defense Intelligence Agency. He assists the Director of Analysis in supporting China analysis and intelligence production requirements to the Office of Secretary of Defense and the Joint Chiefs of Staff.

Gentlemen, there's going to be a little timer on there. You'll see a green light. You'll each have seven minutes. As it winds down, the light will go to orange and then to yellow and then to red, and then we hope you will sum it up at about the red light. Then we'll go for rounds of questions, and each commissioner will have about a five minute period.

So thank you. Admiral McVadon.

**STATEMENT OF ERIC A. McVADON, REAR ADMIRAL  
U.S. NAVY (RET.), DIRECTOR, ASIA-PACIFIC STUDIES  
INSTITUTE FOR FOREIGN POLICY ANALYSIS, INC.  
WASHINGTON, D.C.**

REAR ADMIRAL McVADON: Thank you. I'm reminded that when I told the president of Iceland that I was going to China, she said please tell me in Icelandic; "I don't get the punch line."

It was serious. Larry, in my written statement I have attempted to answer the questions, and I hope that you will find that that's the case. Let me in the next seven minutes provide the short version answers to that the questions posed to me in advance. I do appreciate this second opportunity to offer the Commission my views. The first was in 2005, on the ongoing modernization of China's military, which I consider a major effort by Beijing, largely focused on a combination, and I haven't heard other people say this, of deterring and preparing for a Taiwan contingency. I emphasize the deterring because the Chinese say that to me. You can believe it or not, as you wish.

Chinese leaders do not want to attack Taiwan or have a war with the U.S., of course, and possibly with Japan, but obsessively feel they must be ready for such conflict.

I think most prominent are the PLA's many hundreds of increasingly accurate short- and medium-range ballistic missiles with conventional warheads targeted on Taiwan, which are soon to be complemented by long-range land-attack cruise missiles.

Taiwan's meager missile defenses face an escalating challenge well beyond any conceivable enhancements or augmentation. That's not even a contest. These missiles plus Special Forces actions sabotage, and information operations to disrupt the defenses would

allow follow-on attacks by modern PLA tactical aircraft aiming I think for chaos and capitulation. Amphibious and airborne assaults on a demoralized Taiwan could follow relatively safely at that point.

Taiwan cannot successfully defend itself alone and consequently must either avoid conflict, convince Beijing its interests are not served by an attack, or rely on prompt and effective U.S. intervention. Beijing seeks to thwart that intervention. For example, something that's been mentioned often today, spearheading the effort to complicate U.S. Navy access are eight new quiet and capable Kilo class submarines with very advanced supersonic missiles. That's the SS-N-27 Bravo anti-ship cruise missiles that China has procured from Russia. Would we unhesitatingly sail carrier strike groups into waters with these Kilos and many other undetected PLA Navy submarines, all capable of submerged launch of very potent long-range anti-ship cruise missiles, some specifically designed to defeat our Aegis defenses?

Additionally (this has been alluded to also) there is looming very large the prospect of conventional warhead ballistic missiles that with maneuvering reentry vehicles, MaRVs, not MiRVs but MaRVs, and other penetration aids could both avoid intercept and home on major ships at sea as well as regional bases, of course. These initial attacks and such disruptive things as ASAT and computer network attacks could degrade U.S. defenses and allow attacks with modern PLA aircraft launching advanced weapons.

This complex dual campaign--this is something else I haven't heard mentioned today--the dual campaign--I mean by that defeating Taiwan and thwarting the U.S. and possibly Japan--arguably exceeds the current capability of an inexperienced PLA. However, the PLA aspires to close the gaps and may in any case feel compelled to act if deterrence fails. I mean deterring Taiwan from doing what China doesn't want it to.

Yes, the U.S. military could defeat the PLA in an extended conflict. Nonetheless, huge and prosperous China has won the arms race with Taiwan and threatens timely U.S. intervention. Consequently, we should now strive to make the military balance irrelevant. Some in Taiwan recognize this disappointing situation and advocate counterstrike missiles to threaten China.

I view this as inflicting pinpricks to a dragon. There are far more prudent alternatives. Economic and cultural ties do offer hope of a future peaceful solution. However, innovative thinking now must not only cope with a new threat militarily, of course, but also influence Beijing in non-military ways. Beijing's idea of lessening the apparent threat to Taiwan, the campaign to win the hearts and minds rather than intimidating, just might grow to significance if nurtured.

More broadly, we must encourage Beijing to realize that an

attack on Taiwan could prove not to be a solution, but rather a profoundly weakening, even disastrous, experience for China.

The PRC's strength stems from its remarkable economic strides and constructive international role. An attack on Taiwan would torpedo these accomplishments. Moreover, PRC regime survival could be jeopardized and reunification with Taiwan would likely not be a result. Lecturing Beijing won't work. But our reinforcing China's progressive posture and global stake-holding role just might help.

Taiwan does warrant the emphasis I've given it. However, Chinese leaders are looking beyond Taiwan. Energy security and protection of ocean commerce are major concerns, and Beijing could, of course, have sinister long-term hegemonic intentions. In any case, emerging China naturally seeks a military commensurate with its new status as a regional and maritime power.

Two examples of logical developments that might reflect their looking beyond Taiwan are the new Shang class nuclear-powered attack submarines, the SSNs, and the possible prototype aircraft carrier.

Potential disruptors of the flow of oil to China--we might envision India's falling into this category in some circumstances--would have to heed the prospect of long endurance Chinese SSNs as far as the Indian Ocean and an organic air capability beyond the range of PLA land-based aircraft near the Strait of Malacca, for example.

The point is that there is much of interest and much of concern about the modernization of the PLA, but not every PLA acquisition is cause for alarm. This more capable PLA is arguably the major military that the U.S. must deter or be able to defeat. However, we can guide bilateral relations toward cooperation despite the need as legitimately perceived in Washington and Beijing, to hedge in a very serious way across the spectrum of warfare.

One prominent potential opportunity for cooperation spurred by China's positive role in the Six Party Talks is partnership in a regional security community, a security architecture inclusive of China, as hard as that is for some of us to swallow. I can envision the PLA Navy and U.S. Navy as partners on the high seas, coordinating efforts to ensure freedom of navigation and enhanced maritime security, to curb piracy, smuggling, terrorism and proliferation of weapons of mass destruction, and to conduct humanitarian assistance.

It's reasonable to envision the PLA Navy as part of our thousand ship navy concept, described by the U.S. Chief of Naval Operations, as an international fleet of like-minded nations participating in security operations around the world.

U.S. policies can foster, if not ensure, a favorable outcome. I conclude, presumptuously I guess, by suggesting that the role of this Commission in promoting better understanding of a changing China

and its military is important so the U.S. can achieve the right balance of deterrence, encouragement, cooperation, and we can hope for partnership in the region and on the high seas.

Thanks, and I look forward to your comments and questions.  
[The statement follows:]

**Prepared Statement of Eric A. McVadon, Rear Admiral  
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**[The ideas and opinions are my own.]**

As requested, I will (1) examine the implications of Chinese military modernization primarily for the U.S. and Taiwan, while not ignoring Japan, with respect to cross-Strait conflict issues, offering the prospect of reduced tension and cooperative relations; and (2) look beyond the Taiwan problem to try to discern Chinese goals and possible early force structure planning.

*The focus on Taiwan.* China's ongoing modernization of its military has been extensive and largely focused on a Taiwan contingency. The enhancements of the capabilities of the People's Liberation Army (PLA) accomplished over the last decade have significantly increased the threat to Taiwan; i.e., made it more dangerous for Taiwan to take steps that could provoke or be intolerable to a wary Beijing. Notwithstanding the major military modernization program, Chinese leaders do not want to attack Taiwan and certainly do not want a war with the U.S., and possibly Japan, but feel they must strive to be ready to do so if they deem it necessary. They show to Taiwan both a "soft hand" and a "hard hand," the latter being this more capable PLA that, they believe, provides an inherently greater deterrent effect that decreases the prospects of having to use force.

*Accurate ballistic missiles to start.* If, however, intimidation and deterrence fail, Chinese leaders could now be more confident with the modernized PLA of prompt success—before U.S. forces could react effectively. Beijing almost certainly would start its campaign by employing a very large and greatly improved arsenal of ballistic missiles to disrupt and degrade Taiwan's communications, command and control, and defenses—and terrorize the population. The missile attack would logically be accompanied by special forces actions, fifth column sabotage, and information operations encompassing such things as anti-satellite and computer network attacks.

*Taiwan vs. China: out-gunned, out-numbered, and out-sized.* The PLA's impressive array of accurate short- and medium-range ballistic missiles (SRBMs and MRBMs) with conventional warheads is expected soon to be complemented by long-range land-attack cruise missiles. Taiwan's already meager missile defenses would then face the doubly daunting prospect of large numbers of overwhelming simultaneous attacks from various types of ballistic missiles reentering from space and cruise missiles skimming the earth—a challenge well beyond the capabilities of any existing missile defenses with respect to both sheer numbers of defending missiles as well as intercept capabilities. Taiwan's missile defenses may be made further ineffective through initial attacks on missile defenses by offensive missiles less likely to be subject to intercept. The "new PLA Navy" with more than adequate numbers of very impressive new submarines, destroyers, frigates, and aircraft armed with modern, lethal, long-range anti-ship cruise missiles could readily overwhelm the ROC Navy, were that force to be a factor.

This disruption of defensive capabilities, if successful, would allow effective employment of numerous modern PLA tactical aircraft to attack Taiwan, seeking to produce chaos and capitulation. Beijing may envision that amphibious and airborne assaults to secure lodgments on Taiwan could then be prudently undertaken. These limited amphibious and airborne assaults (within existing lift constraints) could then be followed by the introduction, essentially unopposed, of large numbers of occupation forces. PLA Air Force modern fighter aircraft supported by very effective surface-to-air missiles could readily maintain air

superiority once Taiwan's air defenses, including airfields, had been disrupted or disabled by the missile attacks.

Taiwan does not have missile defenses to cope with the described missile attacks, and prompt procurement of all the missile defenses discussed over recent years would still leave Taiwan quite inadequately defended against the described extensive PLA arsenal of ballistic and cruise missiles. These missiles have been tailored or designed specifically toward the goal of giving Beijing a set of weapons that Taiwan, even with the full support of the U.S. and whatever aid Japanese ballistic missile defense may provide, cannot defend against. The full spectrum of missile defense of Taiwan, broadly defined, including extensive hardening of facilities, hiding of high value targets, dispersal of assets, use of decoys, etc., if undertaken by Taipei would complicate things for China but would almost certainly fall short of adequate protection. These measures might serve well if Beijing somehow chose to conduct only a limited attack. Some critical facilities might be spared. China, if holding most of its missiles in reserve for some reason, might be less confident of the assured effectiveness of an attack. Nevertheless, the Chinese missile forces must be viewed as a very successful undertaking to intimidate and deter Taiwan and to be able to bring Taipei to its knees if intimidation fails.

*China vs. the U.S.: layered options to complicate and delay intervention.* As a consequence of the realization of these astutely conceived concepts for PLA modernization and the inescapable factors of the proximity, size and strategic depth of China, Taiwan cannot expect successfully to defend itself alone. Taipei, I argue, is necessarily dependent on avoiding conflict, convincing Beijing that its interests are not served by an attack on Taiwan, or having prompt and effective U.S. intervention. Beijing has not, in its modernization program, ignored the importance of this potential intervention, including the role of U.S. forces and bases in Japan. (Less attention has been seen with respect to U.S. forces and bases in South Korea.) Prominent in the anti-access strategy is the PLA Navy submarine force. The effort to complicate U.S. Navy intervention would, it appears, be spearheaded by eight new Kilo-class submarines from Russia that would pose a dilemma for U.S. decision makers. Would it be prudent to sail several U.S. Navy carrier strike groups (CSGs) into waters with many undetected PLAN submarines capable of submerged launch of very potent anti-ship cruise missiles (ASCMs)—notably the Kilos with SS-N-27B Sizzlers with ranges over 100 miles? China, it is noted, does not yet have consistently reliable means to detect and target approaching CSGs, but it has various means that could, with a little luck, provide targeting information. Consequently, even before China achieves reliable targeting, there is ample reason for concern.

Beyond this ASCM threat, there is the looming prospect of conventional warhead ballistic missiles that, with maneuvering reentry vehicles (MaRVs), could both avoid intercept and home on major ships. Such missiles are also likely, even sooner, to be highly effective against U.S. bases in the region—although Guam, for the present, seems to be out of range. Tokyo and Beijing would both face interesting political dilemmas concerning the degree of involvement of Japanese bases and forces and the Chinese reaction thereto. These missiles, it appears, would incorporate advanced penetration aids and decoys, in addition to maneuvering—making them serious threats, not simply weapons of terror.

The described ASCM and ballistic missile attacks, if successful, would be expected to degrade U.S. defenses. For example, air defense radars and the carrier flight deck would be vulnerable. The degradation of defenses, including at land bases in Japan, could allow follow-on air attacks with modern long-range missile-carrying bombers and inflight-refuelable maritime interdiction aircraft armed with very capable and lethal ASCMs. Further options employing submarines and very potent surface combatant ships would be available, depending on the circumstances and the residual ability of the U.S. to defend.

*Too complex for the PLA to pull off? Should we count on that?* This complex dual campaign—defeating Taiwan and confronting the U.S. (and possibly Japan)—is arguably beyond the capability of a PLA leadership inexperienced in such complex and extensive joint operations. Moreover, the PLA has not rehearsed and trained for meeting major U.S. and other enemy forces hundreds of miles distant from China. Nevertheless, the PLA clearly has acquired or is acquiring the wherewithal to conduct such operations. It is also clear that the PLA aspires to such capabilities, including the ability for an inferior force to defeat a superior force by achieving surprise, employing asymmetric means (such as the ballistic missiles that circumvent U.S. air defense advantages), and exploiting what are perceived as U.S. niche vulnerabilities

(e.g., extreme reliance on advanced technologies that China hopes to disrupt long enough to gain a tactical advantage).

Consequently, this strategy, the accompanying weapon systems, and other elements of the PLA modernization (e.g., striving for “jointness,” more realistic training, distant operations) introduce at least the specter that the U.S., along with Japan, could be deterred from prompt and effective intervention or that delay, confusion, and uncertainty may be introduced—leading Taipei to doubt Washington’s commitment and feel it has no choice but to accede to Beijing’s demands, or so the thinking in Beijing may go. (Tokyo would almost certainly not move faster than Washington.) Whether or not this reflects reality as it is likely to unfold, Beijing may be emboldened by having achieved this remarkable enhancement of its forces. It may either believe the prevalent rhetoric about preparation of its forces for real combat or receive assurances from PLA leaders unwilling to admit to continued unreadiness to attack Taiwan and repel the U.S. (and Japanese forces, if that decision were made) after so much money and effort have been expended toward that goal. Moreover, given the emotional aspect of Beijing’s Taiwan obsession, we cannot be confident that China will weigh capabilities, risks, and consequences rationally.

*Striving to make the military balance irrelevant.* None of this is to suggest that the U.S. military could not defeat the PLA in a conventional force-on-force extended conflict, and, of course, the U.S. also has an overwhelming advantage in a *nuclear* conflict. To take a flight of fantasy, the sudden miraculous acquisition of P-3 maritime aircraft, submarines, PAC-3 improved missile defenses, and more would not turn the tables or restore a military balance—even if some of these systems would serve to raise somewhat the costs of a PLA victory and make it more difficult for Beijing to decide that success would likely come quickly and easily. Nonetheless, huge and prosperous China has won the arms race with Taiwan—irreversibly in my view. The point is that, although Taiwan cannot adequately defend against huge China, there are means to avoid conflict. Consequently, the effort now should be to continue all the more diligently to make the military balance irrelevant, to make resort to military force an anachronism or an absurdity.

Some in Taiwan recognize this disappointing situation concerning the military balance and advocate Taiwan’s development of counter-strike missiles intended to threaten China if it initiated an attack. I view this as foolishly developing the capability to inflict pin pricks to a dragon—far more likely to ensure disaster for Taiwan than to deter an attack. I have suggested in speeches, conferences, and meetings with influential people in Taiwan (and the U.S.) that there are far more prudent alternatives to be explored. To begin, the extensive economic interdependence between Taiwan and the PRC does matter. Depending on one’s view of China, the economic ties either hold out the prospect of eventual peaceful resolution, making military action an irrational choice, or place Taiwan in a disadvantageous position in several ways: (1) vulnerable to pressure by Beijing, (2) threatened by a modern PLA funded by PRC economic growth based on Taiwan investments, and (3) confronted by advanced technologies obtained via Taiwan companies in China. Regardless of one’s conclusion on the effects of the economic bonds, the interwoven economies of the mainland and Taiwan might be viewed as a facilitator or even a catalyst for potential opportunities to deal with the new cross-Strait situation I have described. Using the familiar explanation, no one wants to shoot a goose laying golden eggs. Taking a stab at another illustrative explanation, despite all the sparks that fly as Beijing’s obnoxious behavior clashes with Taiwan’s testing the limits of tolerance, leaders on both sides of the strait see the economic and cultural ties as yet another good reason to avoid armed conflict.

*Making the case to the ROC military.* In October 2006 I made two comprehensive presentations at the ROC National Defense University south of Taipei. The large audiences included flag and general officers, faculty, and the students (typically up-and-coming officers at the rank of colonel or lieutenant colonel). My idea was to encourage new thinking about how to cope with the new situation stemming from PLA modernization. The audience was, to my surprise, overwhelmingly receptive to the message. The general officer who is the president of the ROC NDU attended both of my extended lectures and participated in the question-and-answer periods. He said he agreed and supported the concepts and the type of new thinking I offered. In the following extracts from those presentations, I have preserved the words used there [but have added in brackets direct mention of Japan in place of the allusions to Japan that I had elected to employ in

Taiwan]. I think the impact is greater if one knows these words—some hard for those ROC officers to listen to—were delivered orally and written to a prestigious and important audience of key senior and very promising ROC military officers:

Beijing and the PLA have devoted innovative, imaginative, single-minded, and focused—yet comprehensive—efforts toward achieving this new posture [the “new,” modernized PLA]. The same sort of innovative and comprehensive effort in Washington and Taipei [as well as Tokyo] is, it would seem, appropriate to determine how best to cope with or manage the new situation. The effort must encompass thinking on how to cope with the new threat militarily, of course; however, there is another at least equally important dimension. The thinking must also be geared to achieve a successful outcome in other non-military, non-hardware ways. This other dimension should...not only focus on means to avoid conflict but also on ways to influence Beijing’s thinking. It could succeed where military efforts could produce mostly frustration for Taipei.

On this matter of shaping Beijing’s thinking, the thrust of the effort by Taipei and Washington [in careful concert with Tokyo, I should have added] might be to reinforce feelings that appear to have taken root among Chinese leaders. There seems to be an inclination now in Beijing toward thinking that the use of military force against Taiwan would be imprudent, risky, dangerous, and not in the best interests of the PRC. The idea of having China appear as less threatening to Taiwan and more cooperative in cross-Strait relations seems to have currency in Beijing—if not necessarily in the PLA. That kernel might be nurtured.

There are other factors that can be gently exploited in making Beijing less inclined to think that military force is a reasonable recourse. As has been illustrated, the PRC’s military vulnerabilities are now far fewer than a few years ago, but other vulnerabilities and concerns persist. These center on the need for the Chinese Communist Party to sustain China’s unprecedented economic growth and the regional stability upon which it depends, the desire of a more worldly Chinese nation to preserve its international stature and reputation as a constructive member of the community of nations, and the need for the Party and the government to devote full attention to the social inequities, corruption, structural flaws and other matters that create unrest, dissent, and other domestic problems. It is not that lectures to Beijing on these matters will prevent a decision to use military force. It is rather that opportunities such as the exchanges between senior U.S. and Chinese officials should serve as a venue to subtly remind those in Beijing that all [especially Americans and Japanese] wish for China continuing economic success, a stable internal and external environment, and a continuing important role in the region and the world. The demise of all those favorable elements for Beijing could be the result of a decision to attack Taiwan....

[I]t is virtually certain that these remarkable improvements in the PLA will not be reversed as the result of pressure from Washington or elsewhere. There is little prospect that Taiwan can surge in overall military capability or find the “silver bullets” to close the gap. Consequently, Washington and Taipei [with Tokyo] must be as clever in responding to these new circumstances as Beijing was in producing them.... Regardless of how much one dislikes or disagrees with Beijing, the response must not be restricted to the realm of military counters to PLA modernization but must be far broader and more positive in scope....

*How we might accommodate to the fact of this “new PLA.”* Beijing must be deterred from using military force—an increasingly less attainable *military* goal for Taiwan and a monumental challenge for the U.S. [and, of course, for Japan]. Consequently, in addition to the military component of deterrence, it is increasingly important that Beijing be positively influenced to realize that its strengthened PLA, used in an attack on Taiwan, would, or at least could, prove not to be a solution for the problem as Beijing sees it but rather to be a profoundly weakening experience for China. The PRC’s strength stems from its remarkable economic strides for three decades and from its rapidly expanding role as a constructive, responsible player in the community of nations. An attack on Taiwan, with resultant regional turbulence and the other ramifications of a demonstration of irresponsible and even reckless PRC conduct would torpedo these accomplishments; moreover PRC regime survival could be sorely jeopardized and reunification

with Taiwan would likely not be a result. Beijing needs subtly to be guided to assimilate this lesson and to recognition of the likely consequences of military action. This seems a worthy undertaking for Washington, Taipei, and other capitals [implying Tokyo] in high-level exchanges with Beijing. Lectures will not likely work; but dialogue that demonstrates a genuine concern for the future of China as an open and prosperous nation serves as a good foundation....

We are faced with a profound and complex challenge in influencing or shaping Beijing's thinking with respect to Taiwan. Reinforcing positive PRC inclinations concerning its relations with Taiwan are now all the more important because of the "new PLA" that could embolden Beijing to act imprudently and bring about devastation in Taiwan (and China) and conflict with the U.S. [and possibly Japan] that would produce regional instability and have highly unpredictable ramifications.

Beijing seems now to be seeking ways to better balance the military threat it poses with efforts to create a more favorable impression of the PRC among the Taiwan citizenry. However, this newly commenced effort is surely not certain to achieve grand, or even moderate, success. Some PRC specialists on the Taiwan issue seem to be exaggerating the effectiveness of these early initiatives by Beijing to capture Taiwanese hearts and minds.... It is simply not clear whether future larger-scale efforts might, indeed, succeed to the point where there is real de-emphasis of the military threat. But, for the present, there appears to be more in the form of gestures than there is of substance.

*A glimmer in the gloom.* We, including Japan, should encourage Beijing's effort rather than belittling or ridiculing it—and all, especially Taipei, stop shooting down trial balloons. Some Chinese interlocutors suggest the military threat to Taiwan has become counterproductive. Military deterrence is essential, they emphasize, but the large missile force aimed at Taiwan and other threats are now serving to alienate the people of Taiwan and counteract the efforts there to improve the image of China. One well-informed interlocutor hinted at having knowledge of discussion in Beijing of lessening the missile threat if the Taiwan elections go as Beijing hopes.

*Looking beyond the cross-Strait problem.* A Taiwan scenario is, appropriately, where our attention is focused. However, Chinese leaders and the PLA seem now to be looking beyond Taiwan, and so should we. Stated succinctly, the PLA focuses on a Taiwan contingency for the immediate future and for the longer term is striving for a military to meet the needs of emerging China. Beyond the fundamentals of protecting its sovereignty, Beijing has made it quite clear that energy security and the security of its ocean commerce are among its major concerns. That implies at least two things: (1) security of pipelines bringing oil and natural gas to China over land, and (2) security of the sea lanes that bring oil and natural gas to China from the Middle East and elsewhere and that are the conduits bringing essential imports for rapidly growing China and serving this huge export economy.

There may, of course, be other more sinister intentions harbored now or in the future by Beijing, despite protestations by PRC leaders and strategists that China is a peaceful and non-threatening country. We and the world must be alert to China's possible turn to pursuing regional hegemony and to a possible future effort to expel the U.S. from East Asia. Although many thoughtful and influential Japanese are working to ease Sino-Japanese tensions and seek cooperative bilateral relations, Tokyo is profoundly concerned about China's future intentions. Nevertheless, we should recognize that emerging China will seek a military commensurate with its new status in the world. Many features of today's PLA have utility beyond Taiwan, but we should not be surprised or disturbed when the PLA seeks appropriate means to carry out its new missions.

Two possible examples of reasonable and understandable developments that might reflect an effort by Beijing and the PLA to look beyond Taiwan (rather than an intensification of the capability to attack Taiwan or become a threat to its neighbors) could be the new class of nuclear-powered attack submarines (SSNs), the Shang class, and the possible prototype aircraft carrier.

- These SSNs have essentially unlimited range and endurance. Their presence (or suspected presence) at the right place in the Indian Ocean, for example, could deter other nations from

- thinking that disrupting oil flow from the Middle East through the Indian Ocean and on to China would be easy. Japan and China have common interests in the flow of oil to Northeast Asia.
- A similar situation might involve Beijing's sending the PLAN to the vicinity of the Strait of Malacca to protect shipping. It would be imprudent and ineffective to have a PLAN surface action group (SAG) far outside of the range of China-based tactical aircraft. Some sort of "organic air" capability would make imminent sense. A "carrier" of some sort could provide "eyes" or firepower at some distance, and generally round out the capabilities that would be lacking most prominently in a SAG of only destroyers and frigates. The ongoing shipyard work with the old Ukrainian carrier Varyag may be the development of a prototype of such a ship.

This carrier acquisition program, if work on Varyag represents that, is cited by some as another threat to Taiwan, ignoring that there are more than ample numbers of suitable airfields (including aircraft fueling and parking) to stage aircraft and to conduct an unlimited air campaign against Taiwan and still have the capacity to employ strikes against U.S. forces and bases in Japan and Korea if circumstances dictate. Moreover, in my judgment, a PLAN carrier would be more a target than an asset in a Taiwan crisis situation. The argument about non-utility for Taiwan is not so strong with respect to the SSNs as these submarines will certainly be of value in a Taiwan contingency against Taiwan, U.S., and Japanese forces (should they be involved); however, the SSNs are expensive and the PLAN has many modern submarines (and more building) that serve exceedingly well for missions related to Taiwan. Songs, Yuans, and Kilos are well suited to be the heart of an undersea effort in a Taiwan contingency, with older submarines also useful. Consequently, the Shang-class SSNs may well be part of the PLA's sensible vision of itself as it looks at missions "beyond Taiwan."

The carrier and nuclear submarine programs are among the PLA's most dramatic (and tenuous) modernization efforts, and they might also be seen as challenging, bold, and provocative—or rational and understandable. The point is that there is much to be concerned about and much we should be doing with respect to the modernization of the PLA and a Taiwan contingency. But to keep it all in perspective, it is reasonable for the PRC to have a military to meet the needs of the China that is emerging. Not every twitch by the PLA should cause Taipei reflexively to duck and Washington (and Tokyo) instinctively to criticize and counter.

*The U.S. outlook: China, simultaneously a potential adversary and promising partner.* As has been described, a new and much more capable Chinese military is being acquired and deployed. It is arguably *the* major military that the U.S. must deter or be able to defeat—and about which Japan must be concerned. However, at the same time, Washington and Beijing potentially can direct Sino-American bilateral relations toward cooperation rather than an adversarial situation—despite the need, as legitimately perceived in Washington and Beijing, to hedge in a very serious way across the spectrum of warfare. The same can be said for Sino-Japanese relations and, more broadly viewed, for trilateral relations—or even adding a fourth (Korean) leg.

One currently prominent potential element of the cooperative relationship(s) is partnership in a regional security framework or community—a concept that is now being intensely discussed, especially in connection with one of the Six-Party Talks working groups. For many, the specter of China as an inevitable or potential adversary fades as Washington (as well as Tokyo, Seoul, and Moscow) and Beijing work in concert on matters of common interest, with the Six-Party Talks and combating terrorism possibly the most prominent current examples. As a retired navy officer, I can envision the PLA Navy's joining the U.S. Navy and other navies, notably the JMSDF, as a partner on the high seas, moving from today's rudimentary search-and-rescue drills (coincident with port visits) to meaningful exercises and coordinated operations to ensure freedom of navigation and provide enhanced maritime security, to curb piracy, smuggling, terrorism, and proliferation of weapons of mass destruction, and to conduct humanitarian assistance—as Beijing wishes it had been able to do for the 2005 tsunami relief operation.

U.S. policies will be a factor in whether this favorable outcome is achieved but could also be a factor in possible future Chinese decisions to act less constructively, for Beijing to ignore its own declarations about its non-expansionist, non-aggressive nature. Understanding today's PLA and how it is changing is

important so the U.S., and its allies and friends, can lessen the prospects of an undesirable outcome and enhance the prospects of achieving the right balance of deterrence, encouragement, cooperation, and, we can hope, partnership in the region and on the high seas.

HEARING COCHAIR WORTZEL: Thank you. Dr. Cole.

**STATEMENT OF DR. BERNARD D. COLE  
PROFESSOR OF INTERNATIONAL HISTORY, NATIONAL WAR  
COLLEGE, WASHINGTON, D.C.**

DR. COLE: Thank you. I have to note, first, that I'm honored to be asked to appear again before the Commission, and I have to note that the views I express are my own and may not represent those of any agency of the U.S. government.

Dr. Wortzel asked the real question earlier when he said how does one measure the military balance? It reminds me of when I worked for Admiral Dave Jeremiah many years ago and asked him a similar question with respect to the Soviets. He said just assume that the entire Soviet Navy is in that corner of the room and the entire U.S. Navy is in that corner of the room, we all shoot everything we have at the same time, and then we see who is still floating.

In some ways, that expresses the problem across the Strait because it's easy to think about a John Wayne style amphibious invasion of Taiwan launched by the PLA, but as the commissioners all know, there's a whole host of other ways in which military pressure can be put against Taiwan trying to force a decision favorable to Beijing. It makes the assessment problem that much more complex.

I spent several weeks in Taiwan in 2004 and 2005 conducting interviews among senior Taiwan military officers, and that experience strengthened my admiration for almost all those officers with whom I interacted. And if I offer my own opinions on Taiwan's military capability and suggest improvements or make recommendations, it's not at all presumptuous, it's with the belief that Taiwan's military establishment is well aware of its situation.

Minister of Defense Lee Jye argued in March 2005 that Taiwan's military had enough equipment and supplies to sustain a conflict with the mainland for two weeks at most. That's a direct quote. He implied that that was satisfactory since, quote, "U.S. intervention forces would take one week to reach the island."

He also offered the opinion that the passage of the special defense budget, that is at that time the budget for Taiwan that included P-3s, conventionally powered submarines, and PAC-3 missiles, would allow the Taiwan military to, quote, "last a short time longer," but then claimed that this arms procurement would, quote, "ensure peace across

the Taiwan Strait for 30 years."

I've known Admiral Lee since 1978, and I have the greatest respect for him. I think that this complex schedule that he offered, the different time lines--we keep reading about them in the Taiwan press--reflect Taiwan's status as a democracy. They're subject to all the flexibility, shall we say inherent in a democracy, and while that certainly earns it U.S. support, it also makes it difficult sometimes to carry out that support.

Currently, the political situation in Taipei is characterized by a troubled president, a still developing civil-military relationship with rifts between the legislature and the defense establishment, and a very daunting geopolitical situation.

A key point in the calculus of American military support for Taiwan may lie in the views expressed by then Vice Minister of Foreign Affairs Ying-mao Kau, immediately following the November 2004 U.S. presidential election, when he stated that while tension would continue across the Strait, he foresaw no war, and noted that, quote, "only the U.S. is qualified to intervene in a cross-Strait situation."

This reflects the thought process I've heard from both military officers and civilian officials in Taipei. And that is, why should Taiwan spend money on the defense if (1) one does not credit the PRC threat to employ military force, does not believe China would employ military force; and (b) if they did, that the United States is certain to intervene in the event of such an attack and intervene almost immediately?

I think that a realistic strategic estimate of Taiwan's position was that offered by retired Admiral Dennis Blair, former PACOM Commander, a year or two ago, when he urged Taiwan to, quote, "reverse the decline in military spending of the last decade," but then also went on to note the difficulty the PLA would face in attacking the islands and concluded that to win Taiwan, quote, "needs only to endure and pose a threat."

In other words, I think Admiral Blair was underlining that the foundation of Taiwan's military defense remains the dedicated, professional skill of its military and more importantly the will of its civilian government and people.

As for the calculus of military equipment and its quantitative capability, present trends in China and Taiwan mean that only successful U.S. intervention could alter the military balance that exists. Taiwan's defense capability requires more than anything else the realization that even if U.S. support is forthcoming, the island will have to be able to defend itself against the PLA, in my opinion, for about a month.

Japan and Australia are strong enough American allies that they probably would, albeit reluctantly, at least logistically support U.S. military action against China in the event of that nation's taking military action against Taiwan.

Recent exercises indicate that the island's military leaders are trying to prepare for a full-spectrum of Chinese military options from sabotage to missile strikes to all out amphibious assault. Defensive improvements underway include a survivable air defense, better integrated command and control and improved joint operational capability. The government support for these objectives is inadequate, however.

Let me turn very briefly to the four specific questions that the Commission provided. How do you assess the military balance across the Taiwan Strait? I think China has already swung that balance in its favor. One has only to look at the development of the People's Liberation Army Air Force over the last decade compared to the Taiwan Air Force to see that imbalance.

Second, how adequate is Taiwan's military capability to meet the threat that the Chinese military poses to the island? Past military clashes have shown Taiwan's personnel consistently to exceed the performance of mainland counterparts, but that said, the growing imbalance in equipment capabilities very seriously hampers Taiwan's military capability against possible Chinese military action.

In the way of weapon systems and other equipment that I think Taiwan needs, I think, first of all, it should continue development of command and control facilities and capability, air field defense and repair capabilities, anti-submarine warfare capabilities to include ocean bottom listening arrays and deep-reaching changes to the military personnel system.

Taiwan should immediately purchase at least one full load out of the standard surface-to-air missiles for the four Kidd-class destroyers it acquired from the United States, and it should immediately modify the three Kidd class destroyers not presently equipped to fly modern helicopters which are crucial to that ship's both self-defense and ability to project power in defense of other naval forces.

What is the effect of China's improvements in submarine warfare and force projection? I think China has long had the capability to overwhelm Taiwan's anti submarine warfare (ASW). I think the current modernization and expansion of China's submarine force is really more acutely appreciated as a military instrument directed against potential U.S. intervention in a Taiwan military scenario.

Do I believe that Taiwan's increasing economic integration with the mainland has a significant effect on the likelihood China would launch a military attack on Taiwan? Not in a military sense perhaps

but as a pull on Taiwan toward the mainland, I do think that the increasing economic integration and increasing numbers of Taiwan citizens--the current figure from Taipei is now two million who are on the mainland on any given day--will lessen the perception by Beijing that it will have to utilize military force against the island.

Thank you and I look forward to your questions.  
[The statement follows:]<sup>6</sup>

HEARING COCHAIR WORTZEL: Thank you very much, Dr. Cole. Mr. Cozad, we look forward to your testimony.

**STATEMENT OF MR. MARK COZAD  
SENIOR DEFENSE INTELLIGENCE ANALYST  
DEFENSE INTELLIGENCE AGENCY, WASHINGTON, D.C.**

MR. COZAD: Good afternoon and thank you for having me here this afternoon. The military balance of power in the Taiwan Strait continues to shift in China's favor for three primary reasons. First and foremost has been due to the fact that resources are being made available to the People's Liberation Army on a host of different areas and they've continued to grow at double digit rates since the early to mid-1990s.

We see nothing that indicates to us that these numbers are going to change and that resources are going to become more scarce for the PLA, allowing them to be able to pursue modernization efforts in a host of areas, including acquisition and development of advanced weapon systems as well as programs designed to reform the personnel system and improve the overall quality and professionalization of the Chinese military.

China's military modernization program is a long-term and comprehensive effort that covers a wide range of areas. The development and acquisition has hit all of the services with the primary beneficiaries being the air forces, the naval forces and the Second Artillery. We are also now starting to see significant modernization efforts being focused on the PLA ground forces as well as a host of asymmetric capabilities that the Chinese appear to be using as the centerpiece of any future confrontation with the United States.

Since 2000, China's modernization has included a wide range of these capabilities. The mix of these developments has proved not only the quality of the weapon systems in China's inventory but also their overall capabilities for future contingencies.

DoD believes this trend will continue at a steady pace and the

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<sup>6</sup> [Click here to read the prepared testimony of Dr. Bernard Cole, Professor of International History, National War College, Washington, DC](#)

Chinese will continue to alter the balance of power much greater in their favor over the next several years.

PLA Navy modernization focuses on presenting a credible threat to Taiwan and preventing any third-party intervention in a cross-Strait crisis. The PLAN has been the major beneficiary of Chinese defense spending and has focused its efforts on acquiring modern diesel submarines, modern destroyers with long-range air defense systems, long-range maritime strike aircraft, and a host of sophisticated anti-ship cruise missiles.

The PLAN has also been importantly focused on developing the operational proficiency of the personnel in that organization, and they have been intent on improving the training and the professional military education programs across that service. They have started to reap the benefits of this over the past couple of years.

The People's Liberation Army Air Force has been another prime beneficiary of China's defense budgets. PLAAF modernization is focused on enhancing its defensive capabilities as well as developing its offensive strike capability. The PLAAF has focused a host of modern systems to include advanced fighter aircraft both indigenously developed as well as from the Russians, modernizing old bombers into aircraft capable of carrying modern air-launched cruise missiles, developing their command and control systems and support aircraft, with the ultimate goal of enabling a mobile, all-weather, day/night, over-water force capable and flexible enough to quickly perform multiple operational tasks and providing a great deal of flexibility to PLA leadership in a cross-Strait crisis.

Similar to the PLAN, the PLAAF is actively improving its training programs and focusing on developing increasingly complex tactics, improving its mobility through a series of mobility exercises, that we've seen over the past couple of summers and increasing the realism of its day-to-day training.

It, as well, has seen a great deal of improvement in the operational proficiency of its force, not only in terms of weapon systems but also in the capability of the operators.

The PLA ground forces who, up until a couple of years ago, have not been as big a beneficiary as the other two services in their modernization programs have also seen modernization efforts significantly spike over the past couple of years, focused on improving the quality of armor, aviation, artillery and amphibious equipment across the PLA.

While these modernization efforts have been uneven across the PLA, this is largely due to geographic locations and different mission designations for various parts of the PLA. However, they have been focused comprehensively across the ground forces in making a wide

range of modernization and new capabilities into the force.

The focus of this force modernization is on offensive capability employing deep battle concepts. To accomplish this goal, recent training has concentrated on improving PLA long-range mobility and improving combined arms operations for China's ground forces.

While training across the PLA continues to lag behind that of the PLAN and PLAAF, in recent years, DIA has seen substantial efforts dedicated to improving the overall professionalism and proficiency of the ground forces. Notable examples of these efforts include developing a professional noncommissioned officer corps, improving professional military education programs for officers, reforming and improving the quality of training and an emphasis on integrating information technology into daily operations.

China's short-range ballistic missile forces form a core of operational excellence within the PLA. The most telling signs of China's modernization in the balance of power in the Taiwan Strait is demonstrated by the large number of short-range ballistic missiles directly opposite Taiwan. This force is growing at an average rate of 100 missiles per year and the range and accuracy of these systems is improving on a regular basis as well.

China's current special operations force comprise rapid reaction forces in the army, air force and navy, as well as dedicated army, marine, army aviation and airborne SOF units. Following observations of U.S. Special Forces in the 1991 Persian Gulf War, the PLA began to place greater emphasis on expanding China's own SOF capability, particularly as a force multiplier in a Taiwan Strait scenario.

PLA researchers continue to study SOF involved in U.S. and Coalition operations. In 2002, the PLA also reportedly set up a dedicated unit to monitor U.S. Special Forces activities including target acquisition and use of unmanned aerial vehicles in Afghanistan. The PLA also studied the role of special operations forces Operation Iraqi Freedom.

As I mentioned, China's modernization efforts are comprehensive. Over the past several years, they have focused on integrating lessons learned from what they have seen in U.S. operations since 1991 in the Persian Gulf War. Some of the key takeaways in modernization programs that the PLA has been involved with have been focused on developing capabilities in the realm of joint operations, mobility, precision strike, command and control, space and counterspace capabilities, information operations and electronic warfare, using information technology to enhance the capabilities of the PLA, and lastly reforming the logistic system.

While the PLA continues to recognize that it has a series of deficiencies, the key point is that they understand the programs that

need to be put in place to rectify those deficiencies and they have well organized and orchestrated programs to be able to address those.

Importantly, the PLA is focusing on ways that it can counter key U.S. dependencies, the three most important being space, intelligence surveillance and reconnaissance capabilities and advanced communications.

As I mentioned, with the balance of favor continuing to shift in China's favor, the important point here is that China today has a far greater range of military options than it did in the mid-1990s and the 2000 time frame. While DIA still believes that China is incapable at this point of conducting a full-scale invasion of Taiwan, the capabilities presented to the Chinese leadership are much greater and enable them a wider range of courses of action than they have at any point over the past 15 to 20 years.

Thank you.

[The statement follows:]

**Prepared Statement of Mr. Mark Cozad  
Senior Defense Intelligence Analyst  
Defense Intelligence Agency, Washington, D.C.**

The military balance of power in the Taiwan Strait continues to shift in China's favor. China's military modernization program is a long-term, comprehensive effort to improve its capabilities. Most importantly, China's power projection and access denial capabilities continue to grow and will provide it with a greater range of capabilities to counter third-party intervention in a future Taiwan Strait conflict. Consistent with a near-term focus on preparing for Taiwan Strait contingencies, China is deploying an increasingly large number of its most advanced systems to the military regions opposite Taiwan.

Since 2000, China's modernization has included a wide range of capabilities such as advanced air, naval, ground, and ballistic missile systems, in concert with a focused effort to improve the level of operational proficiency within the People's Liberation Army (PLA). The mix of these developments has improved not only the overall quality of the weapons systems in China's inventory, it also has improved the PLA's overall capabilities for any future contingency in the Taiwan Strait. DIA believes this trend will continue at a steady pace with future PLA efforts focused on improving command and control, developing guidelines for its nascent joint operations capabilities, and streamlining its logistics system.

The PLA Navy (PLAN) modernization focuses on presenting a credible threat to Taiwan and preventing any third party that might intervene on Taiwan's behalf in a crisis. The PLAN has been one of the major beneficiaries of China's rising defense budgets and has purchased or developed a range of new capabilities to include modern diesel submarines, modern destroyers with long-range air defense systems, long-range maritime strike aircraft, and a host of sophisticated anti-ship cruise missiles. The PLAN also has focused on its operational proficiency with increasingly sophisticated exercises designed to improve the level of coordination between various PLAN components.

The PLA Air Force (PLAAF) has been another prime beneficiary of China's rising defense budgets. PLAAF modernization focuses on enhancing its defensive capabilities while developing its offensive strike capability. The PLAAF purchased and developed a number of advanced fighter aircraft, bombers, command and control, and support aircraft with the ultimate goal of enabling a mobile, all-weather, day-night, over-water force capable and flexible enough to quickly perform multiple operational

tasks. Similar to the PLAN, the PLAAF also is actively improving its training programs and focusing on developing increasingly complex tactics, improving mobility, and increasing realism in day-to-day training.

The PLA ground forces are modernizing on a number of fronts and are improving the quality of armor, aviation, artillery, and amphibious equipment across the PLA. The focus of ground force modernization is on offensive combat employing deep battle concepts. To accomplish this goal, recent training has concentrated on improving PLA long-range mobility and improving the combined-arms operations of China's ground forces. While training across the PLA continues to lag behind that of the PLAN and PLAAF, in recent years DIA has seen substantial efforts dedicated to improving the overall professionalism and proficiency of the ground forces. Notable examples of these efforts include developing a professional noncommissioned officer corps, improving professional military education for army officers, reforming and improving the quality of training, and an emphasis on integrating information technology into daily operations.

China's short-range ballistic missile forces form a core operational capability and are a center of excellence within the PLA. The most telling sign of China's modernization and the balance of power in the Taiwan Strait is demonstrated by the large number of short-range ballistic missiles directly opposite Taiwan. This force is growing at an average rate of 100 missiles per year; the range and accuracy of these systems is improving as well.

China's current special operations forces (SOF) comprise "rapid reaction" forces in the Army, Air Force, and Navy as well as dedicated army, marine, army aviation, and airborne SOF units. Following observations of U.S. Special Forces in the 1991 Persian Gulf War, the PLA began to place greater emphasis on expanding China's own SOF capability, particularly as a force multiplier in a Taiwan Strait scenario. PLA researchers continue to study SOF involved in U.S. and Coalition operations. In 2002, the PLA reportedly set up a dedicated unit to monitor U.S. Special Operations activities, including target acquisition and use of unmanned aerial vehicles, in Afghanistan. The PLA also studied the role of special operations forces in Operation IRAQI FREEDOM.

In addition to these critical areas, the PLA continues to seek solutions that will allow it to "leapfrog" from an army based on mechanization to one built around advanced information technology. Critical developments in this realm include PLA advances in space capabilities, information operations, electronic warfare, and advanced command and control systems. While developments in these areas are moving forward at varying paces, they will form the backbone of future PLA capabilities and are a central part of any consideration of the cross-Strait military balance. The PLA will vigorously pursue modernization in these critical areas.

Another key component of China's military modernization is the PLA's ambition to conduct joint operations. This effort can be traced to lessons learned from U.S. and Coalition operations since the 1991 Persian Gulf War. Although the PLA has devoted considerable effort to developing joint capabilities, it faces a persistent lack of interservice cooperation and a lack of actual experience in joint operations. The PLA hopes eventually to fuse service-level capabilities with an integrated C<sup>4</sup>ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance) network, a new command structure, and a joint logistics system. Since 2000, the PLA also has improved its multiservice exercises, improving PLA experience levels and yielding some insights into its future direction. These insights will become clearer as more advanced weapons, sensors, and platforms enter the inventory and training begins to reflect true multiservice operations.

Lastly, at an all-Army conference in June 2006, President Hu Jintao instructed the PLA to concentrate its efforts on military training. Hu provided the direction for the future development of military training, and PLA was expected to adjust its training plans accordingly. To meet the requirements of joint integrated operations in local wars under "informatized" conditions (the application of information technology to equipment, operations, training, etc.), Hu's guidance is aimed at transforming military

training from training under mechanized conditions to joint training under informatized conditions; military training contributes to innovations in military theory, research and development of weapons and equipment, and fostering development of high-quality officers and men.

China's capability for limited and relatively precise uses of force is growing, expanding the military options available to People's Republic of China (PRC) leaders. While these capabilities are not uniquely tailored to a conflict in the Taiwan Strait, the PRC's options for the use of force in a future crisis are far greater than they were in 2000. As China's military modernization program continues to improve the quality of PLA weapons systems and personnel, the balance of military power in the Taiwan Strait will continue to shift in China's favor.

#### **PANEL IV: Discussion, Questions and Answers**

HEARING COCHAIR WORTZEL: Thank you for that excellent testimony. Commissioner D'Amato.

COMMISSIONER D'AMATO: Thank you, Mr. Chairman, and thank the panel for coming today and talking to us about this important subject.

As the balance shifts toward the mainland in this relationship, the question arises and Dr. Cole, you talked to us before about the military balance and the naval balance. How has the vulnerability of the American carrier task force been affected in this shifting balance to Chinese space, air, surface and subsurface challenge? And has it eroded so much or has it gotten to the point where it's eroded that we have to rethink the defense of Taiwan in terms of the position and viability of the carrier battlegroup? Any one of you?

DR. COLE: I think, sir, that the vulnerability has increased due to China's increased submarine force, not only the increased capability of the submarines themselves, but also the increased availability of submerged launched anti-ship cruise missiles that Admiral McVadon referred to.

It's not so much a matter of countering the carriers directly, it is a slowing their entry into an area for a Taiwan theater. China's shore-based air remains relatively short-range pending further increases in their air-to-air refueling capability, and the carriers themselves are well defended with multiple belts of defense. But nonetheless if China, for instance, were able to kick two dozen submarines out undetected and put them on station, it would certainly slow down the entry into any sort of contest of U.S. carrier battlegroups.

That in turn reflects directly on the point I mentioned about the will and ability of the Taiwan government and people to continue to resist. If they actually expect U.S. military intervention to occur within a matter of just a very few days and that intervention in fact takes a month, I really wonder how long they're going to be able to resist military pressure from the mainland.

And again, I think we've all said here, we're not talking

necessarily about a full-scale amphibious invasion, but rather selective strikes that would impress upon the government and people of Taiwan their vulnerability pending eventual American intervention.

COMMISSIONER D'AMATO: Admiral.

REAR ADMIRAL McVADON: I think it's very important in this regard to look ahead. The Chinese are writing and apparently are quite serious about developing this medium-range ballistic missile, probably an MRBM, that has a homing warhead that would jeopardize carriers and cruisers and so forth. If they, in fact, are able to pull that off, and of course right now one of the barriers, even if they do, is the targeting problem? But even today they might luck out. They might be able to bring the right forces to bear.

It would be a difficult proposition for us to count on the fact that they were not targeting us if they had that missile. So, boy, that's something looking to the future. Imagine the situation where you have those ballistic missiles, and you have the anti-ship cruise missiles that Dr. Cole and I have both referred to.

That's a daunting challenge, something you'd really have to give a lot of thought to, and just what sort of preparation, sanitization, and so forth would you want so it ends up with the scenario that Bud was describing.

MR. COZAD: And if I could add something as well. I don't think we can really just look at it as Chinese efforts to defeat the carrier. That's one part of a multi-pronged defensive strategy that's designed to delay us from getting into the theater and once we get into the theater, if we do become involved in the fight, being able to prevent or present as much of a challenge to us operationally across as many different fronts as possible.

I think as we look at defeating the carrier, one of the questions that has to come up is not necessarily the accuracy of the missiles or the accuracy or the capability of the PLA Air Force. It's that it presents us with a planning challenge that we haven't had to address in the past. So as this is coupled with counterspace capabilities, with information operations, with electronic warfare, there are a whole host of different areas where U.S. planners are going to have to focus where ten years ago with the PLA they didn't really have to spend as much time worried about those specific issues.

COMMISSIONER D'AMATO: Thank you, Mr. Chairman. It seems to me that based on this, we're going to have to rethink the role of the carrier battle group as an exclusive defense of Taiwan, and our planners are going to have to take a look at some things outside the box beyond, or at least certainly in supplement to, the role of the carrier.

REAR ADMIRAL McVADON: Maybe we already have with

global strike and other advanced, long-range weapon systems, but it's still a very complex situation, and you could certainly, when you're sitting in Taipei wonder just what is going on and where are the Americans and so forth. So it presents a difficult situation when you try to look at the politics of it from both Taipei's viewpoint and what Beijing is thinking--a different world.

HEARING COCHAIR WORTZEL: Commissioner Videnieks.

COMMISSIONER VIDENIEKS: A question for the Admiral, a question for you, sir. You mentioned the future possibility of the U.S. and PRC navies cooperating to keep the sea lanes of communication open. I don't think the U.S. at this point has even ratified the Law of the Sea Treaty. I'm not up on the latest developments.

How would the sovereignty issue be affected in a joint operation to keep the sea lanes of communication open when we have not even ratified the treaty at this point. That's kind of a general question.

REAR ADMIRAL McVADON: Yes, every time that you look at a situation of trying to achieve cooperation, even the Northeast Asian Security Community concept, the difficulty of the thorn of Taiwan is there. However, and I say this more intuitively than being able to back it up with something concrete, it seems to me that right now the Taiwan situation is slipping into the background a little bit as an intrusion into the prospect of continuing peace in the region.

And I guess the reasons for Beijing's greater tendency to peace is because maybe the Chinese are more fully realizing some of the points that I tried to make most strongly, especially that it does not serve China's interests to conduct an attack on Taiwan; so at least we have hope. Yes, Taiwan is a terrible intrusion into the ability to cooperate and so forth, and whomever you blame--certainly I do not like China's position on that, but they do make a case that you have to understand and at least accept the fact that that is their argument.

So, yes, the Taiwan issue keeps us, from being able to cooperate in other areas. Remember when we do that, we probably then lessen the chances of the Taiwan conflict. So these factors are not independent.

COMMISSIONER VIDENIEKS: How would the sovereignty issue be involved in a joint operation to keep the sea lanes of communication open when we have not even ratified the treaty at this point? That's kind of a general question.

REAR ADMIRAL McVADON: I don't see that--maybe I'm not seeing the same things you are--as being something that prevents our ability to coordinate operations, just as we have done with the War on Terrorism. And so you proceed to the limits that you can within what's reasonable, you hope that that grows, and you try to resolve problems that come up as they do.

It seems to me that we have so much in common. For example, the energy problem has been talked about a great deal. You can look at the energy problem from the other side and say it's not necessarily a source of competition but rather an area where both countries have a need to ensure that energy flows freely to their countries and to their allies, and so it's a reason for us to find a way to cooperate in protecting oil shipments.

So it seems to me that there are opportunities here. Yes, there are opportunities to stop it all if you look at the other side of it.

COMMISSIONER VIDENIEKS: Thank you. HEARING  
COCHAIR WORTZEL: Commissioner Esper.

COMMISSIONER ESPER: Thank you. And thank you to the panelists for your presentations today. I have two questions and I want to direct the first to Dr. Cole and Admiral McVadon, and the second question to you, Mr. Cozad.

The first question deals with comments you made, Dr. Cole, and I think the Admiral just mentioned, with regard to Taiwan. We've heard this before about Taipei failing to make adequate investments in its defense.

Clearly, it's in the United States' interest to promote stability, to deter any conflict, and obviously our policy is to have both Taiwan and China reach a solution between them, a peaceful resolution to their differences.

Many would also say, though, that a gross imbalance of power between the two promotes instability; that it could invite aggression at some point. And so I ask, what do you think is really going on? Why is there a failure to make the investments in defense to at least bring some parity in the balance of power? And what should we do to get Taiwan, to make those investments?

The second question is separate, dealing more maybe our previous panel, but the question I was going to ask of General Cartwright was how do you, Mr. Cozad, interpret China's investment in its ballistic missile modernization and expansion plans? How do you interpret that in light of their previous policies of minimal deterrence, and how they now they seem to be modernizing and expanding? What should we interpret from that? Is that a reaction to external events or is it something else, a change in their thinking with regard to their strategic policy?

So I'll ask you, Dr. Cole, and then Admiral McVadon for the answer to the first question first.

DR. COLE: Thank you, sir. Let me emphasize that Taiwan is making significant investments in their defense capabilities in many different areas. I think that both we and Taiwan perhaps focus a little bit overly much on this so-called special budget, the items that we

made available to them many years ago.

Having said that, number one, number two I don't think Taiwan ever is going to achieve parity with the mainland. I mean the difference in resources, you know 1.3 billion people against 22.6 million, and the size of the budgets and the natural resources and so forth, the sizes of the economies, I think is simply, is just simply too great.

I think we're doing about all we can do to urge the government in Taiwan, and by government, I don't mean to lay all this on the Chen Shui-bian administration because he faces a situation in the legislative Yuan there that would make it difficult for any president to do more than they're doing.

When President Chen took office before his first term in 2000, he said that his priorities were on bettering the economic and social conditions of the people of Taiwan. And as a democratically elected president, he made that choice and was reelected on that basis, and I think we have to respect that.

Our present administration has made available to Taiwan a very much expanded shopping list, if you will, of weapons. We've sent several evaluation teams over there. Retired four-star officers like Admiral Blair have gone there on several occasions to evaluate and advise and so forth. After a certain point, it's simply up to the government and the people of Taiwan to decide how much money they want to invest in defense and what they think is necessary.

The other side of that coin, of course, is recognizing that and acknowledging that, then the United States has to decide at what point perhaps Taiwan is not making enough investment to engage our efforts further.

REAR ADMIRAL McVADON: Remember how tough it is when you're trying to decide how to spend your money on defense measures. Taiwan legislators realize, if they buy everything the U.S. offers, it still doesn't work against this formidable modernized PLA. When I put it in cold blunt, simplistic terms that's what the implications are.

Actually, of course, it's more complicated than that. If China elects, for example, to shoot a bunch of missiles but in smaller numbers, then even if you have very meager defenses, it probably matters, and if you harden things, it probably matters. But making the decisions about what to spend your money on in Taiwan is really a tough call because so much of what is offered fails to do much against the new threat from China.

When you add the political implications of it where neither side, the Pan-Blue or the Pan-Green, wants to see the other one able to claim success in something, you end up with this impasse concerning arms purchases.

To ensure this is crystal clear, I remind you that if, for example, they bought all the missile defenses as I suggested in my both written and oral testimony, it probably doesn't do much when they're facing a thousand SRBMs and some MRBMs that could be used first that are even more difficult to intercept; MRBMs could take out the defenses and give all the missiles a free ride to their targets. So do you want to spend a great deal of money on that? Maybe you do if you want to stay in bed with the country that has the lead in missile defense in the world, but that's yet another factor illustrating the complexities.

MR. COZAD: In terms of the investment in short-range ballistic missiles, I think one way we need to look--

COMMISSIONER ESPER: I was referring to long range-- intercontinental ballistic missiles.

MR. COZAD: Intercontinental ballistic missiles.

COMMISSIONER ESPER: Right.

MR. COZAD: At this point, we really do not have a great deal of insight into why the Chinese are modernizing that force. This is an area, when we talk about transparency, that we have very little understanding of how the Chinese see the nuclear balance, how they see the future of using nuclear forces, and exactly what role those would play in any future Taiwan scenario.

They are in the midst of a very significant modernization of that force, but at this point there isn't a great deal that they've made available to us in terms of discussions with the United States government.

COMMISSIONER ESPER: Thank you. Thank you, Mr. Chairman.

HEARING COCHAIR WORTZEL: Gentlemen, I have a question for any of you that care to address it, about how China employs some of the principles of war in their military doctrine, and how that affects the United States' ability to defend itself, particularly at sea, and specifically one of the things that the PLA emphasizes is the principle of mass and that includes massed fires.

So the question would be: what can the United States do or what defenses does the United States have today against massed hypersonic anti-ship cruise missiles like the SS-N-22 or the SS-N-27, or even against a single one, but worse, massed missile attacks, should they be able to get close enough?

REAR ADMIRAL McVADON: You sink the launching platform, the submarine or destroyer, before it fires at you. That's, of course, what you're trying to do. If you are cautious about sending the carriers, the reason you're cautious is because you want, before putting the carriers in those waters to create a situation where those anti-ship cruise missiles you described are a far lesser threat.

Now, of course, you would like to be able to develop the defenses that would intercept them and destroy in flight, but right now we're probably faced with a situation that combines those sorts of mass firepower plus the possibility of the ballistic missiles complicating the attack, coupled with Chinese efforts at surprise and all of those other factors, too. The successful coordination of all that may be a pipe dream for the PLA, but it's not something that we can completely ignore. Anyway I think the solution for the moment is trying to make sure the platforms do not get in the position where they can fire on us.

Bud, did you want to add something?

DR. COLE: That's really the key question. I think the very first step is what are the rules of engagement as a crisis develops in Taiwan and U.S. military forces, as we did in 1996, for instance, are dispatched to the scene? There's always the grave risk, I think, that our ideas of how critical the crisis is would be very much different from Beijing's idea.

We might simply misevaluate Beijing's courses of action. Studying all the Strait's crises going back to 1950 is not reassuring in this respect. Certainly, in every case, I would argue, Beijing misunderstood what the U.S. reaction would be, to every one of those crises, except possibly 1962, and I'm not sure we're all a whole lot smarter in understanding how Beijing may judge a particular crisis.

Assuming, however, for purposes of argument, that the proper alert status exists and we're not surprised by a bolt out of the blue by a Chinese missile-firing submarines, I think what Admiral McVadon said, of course, is the key, going back to our preparations and doctrine against the Soviets where we were going to send carrier battlegroups against the Soviet land mass, and the Chinese seem to be emulating a lot of the old Soviet tactics in terms of mass fire power, repetitive waves of missile and aircraft attacks and augmented by submarine-launched missiles and submarine torpedo attacks.

I think in those days we relied on layered defense to protect our carrier task forces. The problem is, and we've not often discussed, is (a) the limited amount of fire power, and I say this advisedly, that can be generated by a modern aircraft carrier. It seems to surprise most people, but if you look at the deckload of aircraft on a modern aircraft carrier, you may find yourself with perhaps 18 F/A-18 aircraft that you're able to dedicate to carrying bombs against enemy ships or any enemy short targets.

The reason I mention that is you get into an offense/defense tradeoff. During the Cold War, the U.S. Air Force used to love to conduct these studies of carrier battlegroups where they would try to write off the Navy's effort by saying that so much of the carriers' fire power has to be dedicated to defending itself, that there is relatively

little left over to launch against an enemy.

I don't buy the Air Force argument in its totality, but they do have a point. And so that by posing enough waves of threat to a carrier battlegroup or battle force, you might force that sort of tradeoff to where you'd be left with relatively little power projection capability.

MR. COZAD: I think along with the concept of mass, getting back to the issue of how the Chinese integrate their key concepts in their warfighting doctrine, another area to look at is the idea of key point strikes which the Chinese have talked about, and which we see a number of modernization programs focused on specific areas that they view as key U.S. dependencies without which we would have a significant difficulty being able to deploy and sustain forces in a region.

I mentioned some of those in my opening statements, but I would go back and reiterate that those capabilities are space, intelligence surveillance and reconnaissance, advanced communications, command and control systems, and logistics.

The PLA has gone through and done very in-depth systematic studies of the way that all of these capabilities have been brought to bear in previous conflicts, whether it's the Gulf War I or Gulf War II, Allied Force or Enduring Freedom, and they have some very interesting findings in those studies, and I think it's very important to note that as we see things come along, such as a PLA emphasis on information operations, a PLA emphasis and the test of the anti-satellite, direct ascent anti-satellite weapon, that they are intently focusing on these areas, and at this point I don't feel that I'm qualified to give an answer on specifically what our capabilities are and what we can do.

But it shows that those are the areas that the PLA are very focused on in addition to the more conventional toe-to-toe confrontation in those types of capabilities that we're much more readily willing to talk about.

HEARING COCHAIR WORTZEL: Thank you. One thing is clear: nobody has said just turn on that ship-based laser and hose all those cruise missiles. It doesn't exist.

All right. Commissioner Wessel.

COMMISSIONER WESSEL: Thank you. I appreciate your all being here today. I would like to ask a question about how confident we should be of our assessment capabilities at this point. It seems that we have been surprised in recent years by the deployment of certain assets quicker than had been anticipated. I guess it was the Kitty Hawk battlegroup where a submarine surfaced within its midst or nearby, and it seems there have been a lot of surprises over the past years.

How confident are we of our assessments that China has not exceeded the capacity that we've anticipated--for each of the panelists?

MR. COZAD: I would be reluctant to get too deep into that question in this forum. I would be happy to come back at any time that you choose and give you a briefing on some of those assessments, but we have had a mixed record. I will readily admit that, and there are a lot of areas where we don't feel that the insight we have into specific Chinese decision-making processes is what it needs to be.

The issue continually comes up about transparency and, as I had mentioned, with the question on the modernization of China's nuclear force. The Chinese have not been very forthcoming in what they have told us about in terms of the intent of modernization of their nuclear force at a time where it does look like the trends are going toward a relatively peaceful interaction between major powers.

Another key area is the defense budget. If you look at the estimates that are being done on China's defense budget, you see numbers that range from the official PRC estimate of, I believe, it's \$30 billion all the way up to a high end estimate of \$140 billion. That makes it very difficult for us to do assessments on what types and how many weapon systems that the Chinese are going to be looking at providing, what types of resource constraints or the lack of resource constraints that they may have placed on them.

But at this point, I would defer any further comment on that to a closed session.

REAR ADMIRAL McVADON: Let me turn that question on its head for just a quick moment. I think however there would be real surprise on the part of the Chinese as to what the full U.S. capabilities are. So let's remember that aspect of it, too.

This is certainly a subjective assessment on my part. I think they could succeed well and quickly against Taiwan; however, I think they would get some awfully big surprises with what they think they can do with respect to the U.S. Navy and to the U.S. armed forces. So let's remember, there are surprises both ways.

COMMISSIONER WESSEL: Dr. Cole.

DR. COLE: I think I'm somewhat of a maverick on this question of transparency, sir. I'm not a professional intelligence analyst obviously, and I frankly try to stay away from classified material. But I haven't seen anything develop in the Chinese Navy or Air Force which are the areas that I look at, in the last few years, that I think we should be at all surprised at.

We could argue about the timing of some of the developments, but if you assume, as I do, that China has got an increasing amount of money each year to devote to its military and therefore is making proportional budget increases, I think we should expect them to

develop Aegis-like systems and we should expect them to develop continued submarine capability, which they've apparently decided is the chief way to slow any U.S. intervention into a Taiwan scenario.

As far as the budget is concerned, frankly whether it's 30 billion or 60 billion or 90 billion, I think it's pretty apparent what they're doing with it. As far as the ICBM force is concerned, certainly in the open press, I haven't seen any evidence that they're about to launch some massive expansion of their ICBM force, but rather they're replacing 30-year-old DF-3s, I guess they are, with more modern capable nuclear missiles. I'd be surprised if they weren't taking these steps.

COMMISSIONER WESSEL: Thank you.

CHAIRMAN BARTHOLOMEW: Thank you. Thank you, gentlemen, for your testimony and also thank you for your service to our country over the years. Mr. Cozad, I'd particularly like to acknowledge that I think that you have given one of the clearest most comprehensive open assessments that I have heard from the intelligence community so I thank you very much for that service, which is going to be helpful to all of us.

I want to go to a question that I asked General Cartwright and the panel before, but I'll phrase it a little bit differently. Given the role that ambiguity plays in the U.S. policy regarding Taiwan, do our war planners have enough of an understanding of what our objective is supposed to be or what our objective might be in order to plan sufficiently for what might be coming down the road?

REAR ADMIRAL McVADON: It's my impression, and remember I have not been on active duty for this period, that certainly since the time that Admiral Blair was the Pacific Commander, that there has been this focused dual effort to say, "How do we both get along with China and be prepared to take China on?"

So I think that with the caliber of people that we've had as the Pacific Commander and the understanding they have had of that China situation and the need to do both things--engage and deter or defeat, that, in fact, we have had good guidance to planners. So I don't share your concern there. I hope that I'm not being just too optimistic.

DR. COLE: When I think back to when I was head of Pacific Fleet plans in the mid-1980s, we really had things very easy. There was only one scenario, that was global nuclear war against the Soviet Union and everything devolved from that. Having said that, my interaction with the PACOM planners over the last few years leads me to believe that they, in fact, do have a handle. There are a number of branches and sequels that you can plan for, and that they're doing their best to plan for those.

The question would be with each variation on a plan to get

involved in a Taiwan scenario to one degree or another is the availability of resources with respect to other obligations around the world.

CHAIRMAN BARTHOLOMEW: Mr. Cozad, any comment? And again, the reason that I raise this question is that I've heard from some junior planners some frustration or confusion that they aren't quite sure what outcome it is that they're supposed to be planning for, which is inherent in the ambiguity.

It is of concern if these are the people who are on the ground trying to pull plans together.

DR. COLE: Let me just add one quick thing. When Admiral Blair was PACOM, he set up a dedicated set of folks to study the Chinese military to try to take the big picture view. All too often, our intelligence analysts get so buried in the details that they really lack the time to look at the larger sort of strategic picture.

I would agree with you that given the resources we're able to devote to the Chinese military, both unclassified and within the intelligence community, I am concerned that there are enough people trying to look at the strategic level at what the Chinese might do in a given conflict situation.

CHAIRMAN BARTHOLOMEW: And Dr. Cole, since I still have a little time to just engage in the discussion, do you think that it is clear enough what the U.S. government believes the outcome should be, say, God forbid, some sort of conflict over Taiwan that people can deal with that kind of planning?

DR. COLE: I think it's probably as clear as it's going to get given the geostrategic situation among China and Taiwan and the United States as well as everything else that's going on in East Asia.

It's just not arithmetic; it's calculus, and I think that planners are never going to have perfect knowledge and unfortunately never have perfect political direction even, and I think they're pressing on probably as best as we can expect right now. I'm not saying there's not a problem; I'm just not sure how to fix it or make it better.

REAR ADMIRAL McVADON: I think it's worth reemphasizing Dr. Cole's point there. It's hard for me to imagine that any president of the United States is quite certain as to how he wants that outcome to be right now beyond opposing a military solution. So as a planner you're working, yes, a very nebulous situation, but one at least where you have some possibility of knowing that certain military outcomes are desirable. Remember the issue of, for example, do you strike the mainland or not and so forth? My point here is that victory in a war with China may come at a terrible price to all parties.

So the planners are dealing with a great many of those difficulties, but we should not be surprised that there is not a clear

political outcome specified. I think it would be imprudent for any Pacific Commander to presume that he knows precisely which way it will happen whatever the scenario is. So, yes, it's an extremely complex scenario.

It just means it's a very complicated world and our relationship with China and the Taiwan issue are among the most complicated of all those almost imponderable aspects that we have to deal with.

CHAIRMAN BARTHOLOMEW: Thank you.

COMMISSIONER FIEDLER: Thank you. I appreciate the discussion we've been having about military specifics. I'd like to broaden the discussion slightly, and if you don't want to, you tell me. I find it difficult in terms of the decision for China to go to war over Taiwan not to consider all sorts of other implications, not simply whether we send a carrier group there or not, and what can happen to that.

But let's say whether they can export anything over the next period, the next three months, six months, a year, and what the implications of that might be? And I also figure that our folks, certainly our civilian leadership, will be worrying about the impact of that on the economy of the United States like maybe we won't be able to buy clothing for awhile or shoes or toasters or microwave ovens.

So how does the planning consider those relatively large-scale considerations? I just haven't talked to the people in the government who I think should be thinking about that. Tell me, how are people thinking about that right now?

REAR ADMIRAL McVADON: This sounds like I'm patting myself on the back. I don't mean it that way. However, for at least ten years--I think I made my first speech on this matter on the 20th anniversary of the Taiwan Relations Act, so that was 1999. I've made exactly the point that you're making, that China must take into account, and we must help them realize they should take into account, the broader consequences for China of an attack on Taiwan.

Of course, what China has really to be proud of in the last quarter century is its economic development, and all of that, as I've pointed out today, could be sorely jeopardized.

The future of the regime could be jeopardized. All of those things are certainly things to be taken into account, but you take me beyond what I have given any thought when you ask what are the consequences for the United States of that sort of thing. Of course you pointed out that we are a major trading partner with China, and so, yes, it has those factors.

But as far as military planning is concerned, that probably is not something that we want the military planner to be concerned with. Of course we hope that at the NSC and among senior government leaders

that those factors are certainly well understood.

COMMISSIONER FIEDLER: I appreciate that, which is why I prefaced my remarks the way I did. You wanted to answer something?

MR. COZAD: Yes. With this discussion on the Taiwan Strait military balance, you know this is a very small portion. I shouldn't say a small portion; it's one portion of a much broader Chinese calculation of how they view themselves in the world and in the region. It's a concept known as comprehensive national power, that is an assessment that they make on a regular basis of their power relative to other world powers based on a series of factors. Military power is one part of that.

There are others such as economic power, domestic security and a whole host of other calculations that go into that. In terms of how that would factor into their decision-making in a cross-Strait crisis, I think that would depend on how strict or how extreme the situation was.

I don't see a military confrontation as being China's first option. I think the military buildup, first and foremost, has to be seen as a result of Chinese discomfort with their position in 1999-2000 time frame. They had to get capabilities on the shelf to be able to give themselves a range of options so that they could deal with future contingencies in the Taiwan Strait.

Now, that factors significantly into the rest of that equation because as China becomes more militarily confident in the capabilities that it can use to deter Taiwan moves towards independence, it gives them a wider range of movement where they can pursue economic and diplomatic goals to try to integrate Taiwan back into their fold.

COMMISSIONER FIEDLER: The point that I was trying to make is that I don't hear our own leadership speaking to the question of economic impact of war in the Taiwan Strait. Publicly, our diplomats don't talk about it; I haven't read a lot of literature about it. To the American public; I don't mean doing a book that 2,000 people read or 20,000, but a few more--

HEARING COCHAIR WORTZEL: My book. Andrew held his book up.

COMMISSIONER FIEDLER: The fit within the overall strategic relationship, it's a serious discussion. Some people would argue that an economic impact on the United States might act as a restraint on U.S. military power or the use of U.S. military power, i.e., the fear of the impact, the economic impact to the United States. Maybe we should let Taiwan go if they, you know--

REAR ADMIRAL McVADON: I shan't enter into that argument this afternoon, particularly at this hour, but it--

COMMISSIONER FIEDLER: I'm not arguing the point. I'm raising it.

REAR ADMIRAL McVADON: But it does make the point that it is much more prudent for us to do as we did and discuss with China its role as a stakeholder in the international situation, in other words, to remind China of its reputation as a responsible member of the community of nations, and to emphasize all of those things, rather than the U.S. side of it, as you pointed out. So it seems to me maybe our people have thought that through and had the right discussion with the right people in Beijing.

COMMISSIONER FIEDLER: Thank you. Thank you very much.

HEARING COCHAIR WORTZEL: Dr. Cole, you raised a point that I agreed with and it brought up another question. You talked about speed, and I agree with you, I think you are absolutely correct, that we should not have been surprised by any of the developments in People's Liberation Army military growth or direction.

There have been a lot of indicators these were happening, but I frankly was surprised by the speed with which some of them happened. You said that--and actually General Cartwright made that point in the last panel very clearly--these things are happening quickly.

In the past, we used to say, well, as we were looking at the PLA, you know, it takes them years to get anything fielded, and then of course when they field it, they don't know how to use it for another decade. Has that time compressed? So we're surprised when they field it now? It came faster than we thought. But has the time from fielding to being able to employ it operationally also become quicker and what does that mean for us?

DR. COLE: I think that 1996 presents a good starting date for looking at that sort of thing. If we look at the very small ship classes, for instance, that were built by the Chinese during the 1990s, very heavily dependent on foreign technology and so forth, we now see a situation where those ship classes seem to be increasing in number and are more quickly integrated into the operating fleet.

I think, as I've argued elsewhere, that the most significant advances made by the PLA in the last decade and a half are not so much the hardware they've acquired as the way they've completely overhauled the personnel training system and education system and the way from a Navy perspective, the way they have significantly changed the way the fleet is trained following our example quite frankly in a much more systemic sort of way.

So I do think that we are seeing a more concentrated effort, not necessarily speeded up perhaps, but much more coherent, and I think they're getting capable operational units more quickly than they used to. I would agree with you on that.

MR. COZAD: And if I could add on to that, as well. In 2001, I think one of the big changes that we saw was the development and the

issuance of the military training and evaluation program within the PLA. That was a new guideline that went across all the different services and it set up standards across the PLA in terms of training content, mission specific training, and also evaluation programs.

They've had fits and starts on all of those, but every time they've come up to a problem, they've implemented a program to try to address that problem. I would say right now we haven't necessarily seen a time line that is shrunk in terms of fielding to operational capacity, but I do expect as they get more and more down this road and they get processes to develop tactics, techniques and procedures and better educate their officer corps and their NCO corps that we will see a compressed time line on those.

HEARING COCHAIR WORTZEL: Did we help teach them to do that with our military exchanges?

MR. COZAD: I don't know if I would say that's through the military exchanges, but they do have, they have a very active program worldwide military-to-military engagement and I think that there are a lot of benefits that they're deriving from those programs.

DR. COLE: I would just say that when I used to escort PLA groups in the '90s, in the early '90s, one of the first questions was always about our ROTC programs, which they later in the '90s set up. I'm not so sure that's an issue of blaming mil-to-mil exchanges, but they certainly have been observing very closely, certainly since Desert Storm, everything we do and trying to emulate those things they think are beneficial to them.

HEARING COCHAIR WORTZEL: Thank you. Commissioner Esper.

REAR ADMIRAL McVADON: Larry, let me add just one quick point on that. A lot of it, though, is still words, more words than concrete actions. Yes, the first step in progress is to recognize the problem, but they're still not doing things like testing their weapons to the maximum range and all those kinds of things. So there is still a lot that they're falling short on.

HEARING COCHAIR WORTZEL: Commissioner Esper.

COMMISSIONER ESPER: Thank you, and I appreciate Dr. Wortzel bringing this up because it was mentioned about modernization and the transparency comment. I asked the question in the first panel today: what they're modernizing is important, but equally important, if not more so, is why? And that's what I'm very curious about, is what is the purpose for which they are modernizing and redesigning and reconfiguring their military forces?

And it's not just the irregular asymmetric aspects of this modernization for which we began today's session, but it's across the board. It's conventional navy, air force, and army. It's strategic with

their Second Artillery. It just begs the question as to what is the purpose, which I think is why the transparency question becomes all the more important--that we understand whether it's to ensure the integrity of the state and stability? Or is it focused on Taiwan? Is it intended to secure their sea lines of communication? If so, how far out? All the way to the Persian Gulf?

To me, these are the fundamental questions, and I don't know if any of you have any comments on that or can answer that question?

REAR ADMIRAL McVADON: Let me give the most succinct answer I can. They are focused on deterring a conflict with Taiwan or being able to defeat Taiwan and to be able to thwart our intervention, and a great deal is focused on that. They say it and we should believe them.

Beyond that, they are beginning to look beyond Taiwan, to recognize that ocean commerce is absolutely vital to them, and that they need to be able to protect it. With respect to ballistic missiles, let me offer a thought. They are not going to let any missile defenses we develop be able to keep them from having a deterrent force.

DR. COLE: I think, sir, that the basic reason for modernizing the military is they believe it's part of being a great power, and they deserve the global respect, and now they've got the money to be able to do that.

Having said that, I think at one level, they're simply concerned about border security. I think they believe, if you ask a PLA analyst at the Academy of Military Sciences or at their National Defense University what the military threat to China is, they'll say Japan, and they'll say the United States. They see us continuing to modernize. They're frankly awed by the performance in Desert Storm and a lot of the operations they've observed in Iraq and Afghanistan.

At a lower level, they are focused on Taiwan, I agree with Admiral McVadon on that, and beyond Taiwan, I think that the navy planners in Beijing are certainly, I am sure, singing a song about sea lines, of defending sea lines of communications loud and clear. I'm not sure how much of a hearing they're receiving by the PLA leadership right now, but I do believe that's something that they are probably going to pursue in the future, assuming they believe that the Taiwan situation is under control.

COMMISSIONER ESPER: Thank you all.

MR. COZAD: I would agree with Dr. Cole's point. One of the questions that we regularly get asked is if the Taiwan situation were resolved tomorrow, would China continue on its military modernization program, and we say yes.

We believe that Taiwan has served as a mechanism to focus that modernization and focus it on certain key capability areas, but that

even absent that, that desire to be a global power, as I mentioned, the concept of comprehensive national power, having a modern military is an absolutely crucial component to that.

In terms of their ability to look beyond Taiwan, I think energy security is a big issue. One of the things we're not seeing are those discussions about energy--outside of the navy actually--are energy security driving a PLA Navy force modernization effort. They recognize that this could be a problem, but I think it's early stages of that discussion.

In terms of their global engagement, much of that has been military diplomacy or actual diplomacy, and so there are just a lot of things that are churning right now, but I do think the Taiwan Strait will continue to focus their modernization efforts until the situation is resolved or until they feel that they absolutely have it in hand.

HEARING COCHAIR WORTZEL: Gentlemen, thank you very much for some thoughtful remarks and an excellent panel. I want to take the time, too, to thank Shannon Knight and Luke Armerding on the Commission staff. I know you've been in touch with them, but they supported us very well in helping to arrange this hearing and giving us the support to select out a group of witnesses that are as good as you have been.

CHAIRMAN BARTHOLOMEW: With that, we are closing for today. Thank you very much, everybody. We'll be back at 8:30 tomorrow morning.

[Whereupon, at 4:00 p.m., the hearing recessed, to reconvene at 8:34 a.m., Friday, March 30, 2007.]

**CHINA'S MILITARY MODERNIZATION AND ITS IMPACT ON  
THE UNITED STATES AND THE ASIA-PACIFIC**

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**FRIDAY, MARCH 30, 1007**

**U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION**  
*Washington, D.C.*

The commission met in Room 562, Dirksen Senate Office Building, Washington, D.C. at 8:34 a.m., Chairman Carolyn Bartholomew and Commissioners William A. Reinsch and Larry M. Wortzel (Hearing Cochairs), presiding.

**OPENING STATEMENT OF CHAIRMAN CAROLYN  
BARTHOLOMEW**

**CHAIRMAN BARTHOLOMEW:** Welcome to the second day of our hearing on China's Military Modernization: Its Impact on the United States and the Asia-Pacific.

Yesterday we heard testimony from the Commander of the U.S. Strategic Command and a representative of the Defense Intelligence Agency and a number of private sector and academic experts gave us their analysis of the regional impact of China's military modernization as well as its impact on the security of the United States.

Today, we will continue to examine the modernization of the People's Liberation Army with a special emphasis on asymmetric capabilities as well as recently demonstrated space and counterspace capabilities. We look forward to the testimony of today's panelists, who are some of the foremost experts studying these issues.

With that, I'll turn the microphone and the gavel over to the hearing cochair, Commissioner Bill Reinsch, who will chair today's panels. Thank you.

**OPENING STATEMENT OF COMMISSIONER WILLIAM A.  
REINSCH, HEARING COCHAIR**

**HEARING COCHAIR REINSCH:** Thank you. The issues we're going to explore today are important, not because conflict with China

is likely, but because the cost of miscalculation is unaffordably high.

For this reason, it's important that we understand as best we can the intentions behind China's military and strategic planning. In the last decade, the Chinese military has expanded its technological sophistication and power projection to a greater extent than in any previous time in the last century.

In October 2003, China became the third country to put a human being into space. In January 2007, China also became the third country to intentionally destroy a satellite in space. Three months prior to the anti-satellite launch, Beijing released a space white paper which gives the assurance that, quote, "China is unflinching in taking the road of peaceful development and always maintains that outer space is the commonwealth of mankind."

All of these recent developments indicate that China is rapidly becoming more technologically sophisticated. Were our efforts to coexist peacefully to fail and we were to find ourselves in a conflict over Taiwan or something else, their asymmetrical military capabilities could lengthen the conflict and make it considerably more difficult and expensive for the United States.

The question for the United States and for the Congress in particular, is what should we do about all this? How can we best protect our fundamental national interests while acting as a responsible member of the community of nations?

The Commission greatly appreciates the witnesses who are appearing today and those who appeared yesterday, sharing their wisdom about how these questions should be answered.

We have two panels this morning. The first will address China's information warfare, missile warfare, cyber operations and other disruptive capabilities. And the second will focus specifically on what China's military objectives are in space.

Those who are on the first panel have been asked to give their views on the technologies that are being developed for or are already employed in the Chinese military that could thwart the qualitative superiority of U.S. forces including technologies used for conducting information warfare, cyber attacks and counterspace strikes.

Today's two witnesses are Dr. James Lewis, who is the Director of the Technology and Public Policy Program at the Center for Strategic and International Studies. Before joining the CSIS, he was a career diplomat and worked on a range of national security issues in that capacity, an introduction which understates both his background and his capabilities.

He has a long career both at the State Department and at the former Bureau of Export Administration, now the Bureau of Industry and Security at the Department of Commerce.

Our second witness, who is on his way, I'm told, is Dr. Ehsan Ahrari, who is a professor at the Asia-Pacific Center for Security Studies in Honolulu, Hawaii. He has authored numerous books and journal articles and specializes in U.S. strategic issues affecting the Middle East and parts of Asia including China.

Let me remind the panelists that initial remarks should be limited to seven minutes. When you reach the five-minute mark, the yellow light will be illuminated in the box in front of you. When your full seven minutes has been consumed, the red light will be illuminated.

If you reach that point, please try to wrap up as quickly as you can. I want to emphasize that your entire prepared statement as you submitted it will be put in the hearing record and that, in turn, will be posted on the Commission's Web site, along with the transcript of your oral testimony and the dialogue with commissioners that will follow.

**PANEL V: INFORMATION WARFARE, MISSILE WARFARE,  
CYBER OPERATIONS, AND OTHER DISRUPTIVE  
CAPABILITIES OF THE PLA**

HEARING COCHAIR REINSCH: We're pleased to continue the hearing this morning and to have our panelists with us. We'll begin with Dr. Lewis.

**STATEMENT OF JAMES A. LEWIS  
DIRECTOR AND SENIOR FELLOW OF THE TECHNOLOGY AND  
PUBLIC POLICY PROGRAM, CENTER FOR STRATEGIC AND  
INTERNATIONAL STUDIES, WASHINGTON, D.C.**

DR. LEWIS: Thank you, Mr. Chairman, and I thank the Commission for the opportunity to testify. This is an area I've been studying for the last five or six years, and I've put out five or six reports, one a year since I've been at CSIS, on issues of cyber security and asymmetric warfare. So my remarks summarize the research I've done. I'd be happy to provide that if there's any interest.

What I'd like to comment on is the changes in the nature of warfare, the implication of these changes for military modernization and the challenge these pose for the United States. The first change--you all know this--is the development of a high tech information intensive mode of combat. The U.S. pioneered this. The U.S. is the world's leader in it, and it gives us an amazing degree of conventional military superiority, more than any other force that we could face.

The result of that is that our opponents are looking for new kinds of weapons and attacks, things they can do that give them asymmetric advantage, avoiding conflict where the U.S. is strong, in the

conventional arena, for example, and attacking where the U.S. is weak. These are the things that the Chinese are exploring at the same time they're building their conventional military forces. This explains, I think, some of the military modernization.

I'd like to put it in a larger context though. Some of it, as you're well aware, is still a degree of recovery. We could probably discuss how far they've recovered from the mistakes the Chinese made for the first 30 years of the People's Republic in building their military forces.

They're deeply concerned with prestige. A lot of this is, 'if the Indians have a carrier, I should have a carrier, too.' They'd like to be recognized as the paramount power in the Asia-Pacific region, and this is where the challenge for the U.S. arises.

There's also been a theme for decades in Chinese thinking about catching up to the West, or even leapfrogging, adopting new technologies that will put them ahead of the former great powers, and the notion of leapfrogging reinforces Chinese thinking about asymmetric advantage. There's some magical thing you can develop that will immediately give you a better capability.

China's military is not a peer to the U.S., but it is a challenger. The challenge comes from this combination of growing conventional capabilities and from the pursuit of asymmetric advantage. Seeking asymmetric advantage is not new and the Chinese are not the only people to be seeking it.

What is new is the means used to gain that asymmetric advantage. One of the programs, and I apologize, but I had got slightly mixed signals on what I was talking about, so I have a little bit of anti-satellite information in here.

I hope I note somewhere in here, that there is a connection in that one of the best ways you can attack satellites is to attack the cyber networks that support them. So there is a clear link here in my mind and probably in the mind of the Chinese.

China has expended considerable effort on anti-satellite weapons and information operations. These I think are the primary areas along with perhaps attacks on our carriers for asymmetric warfare, and at this point, however, neither anti-satellite weapons nor information operations pose much risk to U.S. military superiority.

The U.S. can undercut many of these Chinese efforts if it has a robust response. Space is an area of asymmetric advantage and one way to counter China's efforts is to continue to aggressively pursue the USA symmetric advantage in space.

Prior to the anti-satellite test, many nations, including China, castigated the U.S. for its planned military activities in space. My own view is that space arms control is not in the U.S. interest; it would

not advance U.S. national security. My formal statement gives a number of reasons why this is so, but the primary reasons are that a ban on space militarization, on space weapons, would be unverifiable and we are not negotiating with a partner who has either experience or credibility.

Anti-satellite weapons, however, may not pose the greatest threat, and I want to highlight two particular things for the Commission to think about. We should assume that the Chinese are working on deception and denial efforts including jamming of satellite signals and spoofing of targets.

This involves, for example, studying the signature of a weapon. What is the heat signature of a tank? What is the heat signature of a missile system? And then finding a way to duplicate that signature in a decoy. This worked very well in Kosovo.

The Chinese and others have studied the experience in Kosovo where Serbian forces were able to confuse U.S. sensors and use a combination of concealment, mobility and deception to defeat our high-tech mode of warfare. Now, defeat might be a little overstatement, but there are things that you can do, and our opponents including China are exploring them, to make it harder for us to win, given the way we fight wars.

Denial and deception are one part of information warfare. Another information warfare tactic is to corrupt data after it's been collected or damage the computer networks that process and distribute data and that support decision-making.

China has targeted U.S. information systems as a vulnerable component of our new high tech style of combat.

In the larger sense, information technologies are a primary target for asymmetric attack. Gaining information superiority is the hallmark of the new style of warfare and if you can interrupt or damage that information superiority, you erode your opponents' capabilities. Conflict in cyber space is clandestine. It can be difficult to assess intentions and threats.

It's easier to assess vulnerabilities. U.S. networks are very vulnerable from an intelligence perspective, which is the perspective I'm more interested in. Several nations including China have exploited these vulnerabilities in U.S. networks to gain valuable information. These efforts and our own inadequate response have damaged U.S. national security. It's safe to assume that in the event of a conflict, a foreign opponent would attempt to exploit our vulnerable networks to disrupt or damage military operations including satellite operations.

The central point to consider in this assessment, however, is how closely linked are military capabilities and information networks? If there is redundancy in networks or if networks are resilient, cyber

attacks will not do much damage.

My own view, and the view I have stated routinely now for a number of years, is that the press overstates the risk of cyber attack and that cyber weapons will not provide China with a military advantage.

Surreptitious long-term attacks on the U.S. economic system might seem attractive, but I think there is considerable risk in them, not only the risk of discovery, but the risk that they could rebound and damage China's economy as much as they damage the U.S.

Again, a robust U.S. preparation can mitigate the consequences of cyber attack. A better informational warfare strategy and again something the Commission might wish to consider would be one that focused on increasing an opponent's uncertainty. An uncertainty strategy makes an opponent unsure that they know what is happening, unsure about their data. Finding ways to inject false information into the planning and decision processes or manipulating information that is already in the system can provide military advantage.

The Chinese are familiar with the use of false or misleading information to confuse their opponents and we should not discount the possibility that they'll pursue an informational strategy that seeks to expand uncertainty and confusion instead of attempting to unleash what I would consider an improbable electronic Pearl Harbor.

My assessment downplays the effect of both cyber and anti-satellite weapons in terms of the military balance between the U.S. and China. The risk here is that the Chinese will miscalculate, that they'll assume that their weapons give them a much greater advantage than they actually have.

They clearly miscalculated the anti-satellite test. It's fair to ask if they could miscalculate again on the benefits their asymmetric weapons give them or the benefits they could gain in a conflict?

We should always bear in mind that asymmetric weapons are second-best--right--that cyber attack anti-satellite weapons are not as good as having conventional superiority. But it's fair to say that we need to consider whether or not our potential opponents will miscalculate this and start a conflict, as we've seen happen in the past, that they think they can win and which they will not.

Thank you. I'll be happy to take your questions.  
[The statement follows:]

**Prepared Statement of James A. Lewis, Director and Senior Fellow  
of the Technology and Public Policy Program, Center for Strategic  
and International Studies, Washington, D.C.**

Let me thank the Commission for the opportunity to testify. I would like to talk about changes in the nature

of warfare, the implications of these changes for China's military modernization, and the nature of the challenge these changes pose to the U.S. and others.

A discussion of these issues would need to consider China's intentions and capabilities. China's intentions are unclear – the policy processes in Beijing are opaque when they are not impenetrable, but we can make deductions about these intentions by observing the kinds of military capabilities China is acquiring. There needs to be some care taken in making these deductions - modernization could reflect military ambitions, a desire for improved defense, a wish to demonstrate prestige and status, or a combination of all of these. Any estimate of the effect of China's military modernization also needs to consider the strengths and vulnerabilities of potential opponents, and in particular the U.S.

We should consider China's military modernization in the context of changes in the nature of warfare. Three related developments shape the environment for armed conflict. The first is the development of a high tech, information-intensive style of combat pioneered by the United States in the first Persian Gulf War. The second is the reaction of our potential opponents to the conventional military superiority this high tech, information intensive mode of combat has given the U.S. The third is the development of new kinds of weapons and new modes of attack. In combination the conventional strength provided by the high tech, information intensive style of combat adopted by the U.S. means that potential opponents would seek asymmetric advantage – avoiding conflict where the U.S. is strong and attacking where the U.S. is weak, and they will use unconventional weapons and tactics in doing this.

### **Modernization**

These trends explain some of what China is doing in its military modernization efforts, but they are not the full explanation. China appears to be deeply concerned with prestige, with gaining international recognition that it has reclaimed its place among the great nations of the world. China would also like to be recognized as the paramount power in the Asia-Pacific region. Some of its activities and acquisitions are made in the interests of prestige and influence, and the competitors for China in these efforts include not only the U.S. but also China's powerful neighbors; India, Russia and Japan.

China's military was, for many decades, very poorly adapted to the high tech style of combat that began to appear in the 1970s. A decade ago, China's military lagged behind the larger powers, such as India. More embarrassingly, it also lagged behind smaller countries like Korea or Singapore in the sophistication of its arsenal. China's national policies to develop a high tech economy, with efforts like the 863 Program, have always had a military component in order to remedy China's lag in military technology.

There has also been a theme for many decades in Chinese policy and thinking of 'catching up' to the west or even 'leapfrogging' western nations. The notion that China would be able to find some way to surpass other nations remains attractive in China, despite the many failed leapfrogging efforts, and it reinforces Chinese thinking about the need to gain asymmetric advantage.

China's military modernization programs was at first an effort to repair the damage done by Mao's romantic notions of combat and to build the forces needed to deter potential attackers. It is now an effort to assemble the forces needed to assert regional primacy. China's likely goal in this modernization is to build military forces that are superior to its regional peers, that create the option for quick and successful action against Taiwan, and that are capable of defeating U.S. forces in a regional contest.

These are not easy goals to attain, however. India, Russia, Japan, and even Korea all have formidable military forces. U.S. forces far surpass these nations in their capabilities, and even though the war in Iraq has seriously eroded U.S. ground force capabilities, U.S. air and naval forces remain superior to China or any other nation. Nothing China has done in its modernization efforts changes this. Reaction to China's programs, particularly in Japan, means that the goal of regional supremacy is probably unattainable, but this does not mean the Chinese will stop their pursuit of it.

## **Asymmetric Warfare**

China is not at all likely to stop its pursuit of capabilities that counter U.S. strengths. China's military is not a peer to the U.S., but it is a challenger. The challenge comes from a combination of increased conventional capabilities and from the pursuit of asymmetric advantage – using new weapons and tactics to attack an opponent in areas where it is weak or vulnerable. Seeking asymmetric advantage is not new, nor is China the only country to seek it. What is new is the means that U.S. opponents like China and others plan to use to gain asymmetric advantage. One part of the modernization effort looks for ways to counter U.S. force projection capabilities. Other modernization efforts look for ways to erode the U.S. military advantage by attacking information and communications assets, including satellites and networks.

China's military is developing weapons and tactics to produce this erosion. The most dangerous of these programs are those aimed against U.S. carriers. China has acquired many of the technologies developed by the Soviet Union to attack U.S. Carriers and it is refining these technologies and the tactics needed to use them. Another set of programs is developing anti-satellite capabilities and a third involves information operations. While China has expended considerable effort on anti-satellite weapons and information operations, neither activity poses much risk to U.S. military superiority.

## **Anti-Satellite Weapons**

China's January 2007 anti-satellite test has received much attention. The test should not have been a surprise. The Chinese have been working on anti-satellite weapons for at least a decade, despite their denials. The particular weapon used in the test – a kinetic intercept of a low earth orbit satellite - is the least sophisticated mode of anti-satellite attack, and something that the Soviets and the U.S. developed, tested and abandoned decades ago.

China is working on other anti-satellite weapons, and public reports speculate that these include ground-based lasers and, perhaps, attack satellites. It also includes cyber attacks against the ground facilities and networks that control U.S. space assets. Since it is clear to most militaries that a good portion of the U.S. advantage in combat comes from satellite data, potential opponents like China are searching for ways to interfere with these services from space and the networks that support them.

As with many of China's military modernization programs, a robust U.S. response can undercut China's efforts. In anti-satellite weapons, the U.S. can reinforce its advantage in space by continuing to harden its satellites, by moving to a more flexible military space architecture, by accelerating its Operationally Responsive Space programs and by developing alternative technologies, such as high-altitude UAVs and mini-satellites. These alternate technologies could provide 'space-like' services that would render attacks on satellites useless. Since the U.S. is already pursuing many of these programs, and given the robustness of its satellite fleet, if the Chinese were to use anti-satellite weapons in a clash, they would gain no advantage. It is in the U.S. interest to ensure that this continues to be the case.

Prior to the test, many nations, including China, castigated the U.S. for its plans for future military activities in space. The U.S. ignored them, and this has proven to be the right decision. Space arms control efforts would not help the U.S. retain its military advantage, nor would they make a positive contribution to national security. A UN treaty banning weapons in space would harm U.S. national security. We would observe it; others would not. One reason China has been an advocate of a treaty is because it calculates that an agreement would put the U.S. at a disadvantage.

A ban would be unverifiable, even if there were an inspection regime put in place. There are many ways to attack satellites and the services they provide, and the kinetic weapon China used is the most primitive and most detectable means of attack. No treaty could credibly address all of them. It is difficult to negotiate seriously with a partner who has little experience of arms control and whose credibility, after years of

denying that it had anti-satellite programs and asserting that its intentions in space are entirely peaceful, is badly tattered. Space is an area of U.S. military advantage – asymmetric advantage in that no other nation can match it. One way to counter China’s military modernization is to continue to pursue aggressively the U.S. asymmetric military advantage in space.

However, anti-satellite weapons might not pose the greatest problem for the military space services used by the U.S. military. We should also assume that the Chinese are putting considerable work into deception and denial efforts, including jamming of satellites signals, interference with networks, and spoofing of targets. This can involve, for example, carefully studying the signature of a target weapons system that the U.S. sensor collects, and then duplicating that signature in a decoy. Denial and deception efforts may actually be of greater concern, since we know from the experience in Kosovo that a skilful combination of concealment, mobility and deception can confuse U.S. technical collection.

### **Informational Warfare**

Denial and deception are one aspect of information warfare. The data collected by sensors is erroneous, making the decisions based on that data also erroneous. Another information warfare tactic would be to corrupt stored data, or to damage the computer networks that process and distribute data and support decision-making. Like satellites, China has targeted U.S. information systems as a vulnerable component of the U.S. style of combat.

Information technologies are a primary target for asymmetric attack. Information – an array of intangible goods that include technological know-how, data, statistics, and news, and the networks and processing technologies that aggregate, process and distribute it have become an integral part of national power. Gaining information superiority, whether through knowing more than an opponent or from disrupting his ability to know, has also become one of the keys to success in conflict.

Conflict in cyberspace is clandestine, so it can be difficult to assess intentions and risks. It is easier to assess the vulnerability of U.S. systems and the potential consequences of an information attack. U.S. networks are very vulnerable. Even highly sensitive networks used for command and control or intelligence are not invulnerable. From an intelligence perspective, several nations, including China, have exploited the vulnerabilities to gain valuable information. These foreign intelligence efforts and the feeble U.S. response have damaged U.S. national security. It is safe to assume that in the event of a conflict, a foreign opponent would also attempt to exploit our vulnerable networks in an attempt to disrupt and damage our military operations.

The central point to consider in this assessment of cyber vulnerability and the consequences of cyber attack is the linkage between information systems and military capability. If U.S. military capabilities depend entirely upon information systems, cyber attacks will greatly do considerable damage. If there is redundancy in information systems or if networks are resilient (e.g. they recover quickly), cyber attacks will not do much damage. For the U.S., so far, vulnerability in a computer network does not automatically translate into a loss of military capability. The risks and consequences of cyber attack are routinely overstated in the popular press, and cyber attack will not provide China with a decisive military advantage.

One way to assess this risk is to ask whether a cyber attack by China launched a few days in advance of a clash could prevent U.S. carrier battle groups from deploying to the Taiwan Straits. Launching the attacks too early would create the risk of discovery and countermeasures. China could attempt to interfere with telecommunications systems – although a successful effort would have to simultaneously disrupt land lines, cellphones, the Internet and satellite communications – a next to impossible task. China could attempt to interfere with transportations, ranging from air traffic control to traffic signals to make it more difficult for the crews to assemble, although it is hard to see what a cyber attack could add to the gridlock and overcrowding that occurs routinely on bad days. It could attempt to interfere with the electrical grid, which could complicate and slow a ship’s departure. Hackers could take over broadcast radio and TV stations,

and play Chinese music and propaganda, or change broadcast parameters in an effort to create radio interference. But these sorts of annoyances do not provide military advantage.

China could attempt to interfere with the computer networks that support logistics and supply chains, but since any clash is likely to be a come-as-you-are conflict, there would be no immediate effect. The Chinese could attempt to disrupt critical infrastructure. This also would not seriously affect the deployment of U.S. forces, but it could hold the risk for China of widening any conflict in exchange for very little benefit. An attack against U.S. civilian infrastructures could easily prompt retaliatory measures. Surreptitious, long term cyber attacks on the U.S. economic system might seem attractive as a way to weaken the U.S. before a conflict, but the uncertain benefits of such attacks – and they are uncertain because the attacks might not work and are as likely to damage China's economy along with any harm done to the U.S. - would have to be weighed against the serious risk and damage that would occur if the effort was discovered.

Again, robust U.S. preparations can mitigate the consequences of a cyber attack or a campaign of deception. If the U.S. plans for how it can continue to operate even though its information systems are under attack, if it builds redundancy and resiliency into those networks that are important for military performance, it can greatly reduce the risk of cyber attack by China or other potential opponents.

A better strategy for informational warfare would be to seek to increase an opponent's uncertainty. Increasing uncertainty in the mind of opposing commanders degrades that opponent's effectiveness. Denial and deception leaves opponents certain that they know what is happening when, in fact, what they believe is wrong. An uncertainty strategy makes an opponent unsure that they know what is happening. Finding ways to inject false information into the planning and decision processes of an opponent, or manipulating information that is already in that system to make it untrustworthy, can provide considerable military advantage. There is reason to believe that the Chinese now use false or misleading information to manipulate and confuse their opponents. We should not discount the possibility that China will pursue an informational strategy that seeks to expand uncertainty and confusion instead of attempting to unleash an improbable 'electronic pearl harbor' that offers only uncertain results.

### **Miscalculation**

This assessment of the risk posed by China's development of unconventional weapons and tactics downplays the effect of cyber weapons or anti-satellite weapons on the military balance between China and the U.S. It is important for all concerned to remember that in the same period that China has been modernizing its military forces, the U.S. has also made significant improvements to the capabilities of its own forces and that these efforts at improvement continue. These U.S. improvements increase the likelihood of success in any conflict, and, if used correctly, will deter opponents from even beginning conflict. There is however, one area of risk that deserves greater attention.

That is the risk that the Chinese government will miscalculate the U.S. response and the international reaction to a military adventure, and that they miscalculate the benefits and effect on the military balance of anti-satellite or cyber weapons.

The Chinese clearly miscalculated the reaction to the anti-satellite test. This miscalculation reflects a degree of parochialism in Chinese security policy, a lack of experience in international politics and a certain degree of hubris, perhaps justifiable, over China's tremendous economic success. Whatever the reasons, they did something that a more experienced nation might have decided against doing.

This makes it fair to ask if the Chinese could similarly miscalculate the balance of power in the region. It is not inconceivable that they could overestimate the advantages provided by asymmetric attacks and overestimate the exhaustion of U.S. forces because of Iraq. We can think of several incidents in the past - in 1914 or 1941, for example - when authoritarian regimes have made such miscalculations and initiated conflicts that appeared unthinkable. While it is unlikely that China would make this sort of miscalculation,

particularly before the 2008 Olympics, it would benefit the U.S. to make clear to all of its potential opponents that asymmetric attacks are 'second best,' unlikely to degrade U.S. military capabilities, or change the likely outcome of any clash.

In a rational and transparent world, such miscalculations would not occur. While we do not live in such a world, the U.S. can take actions to decrease both the risks of miscalculation and the risks of asymmetric attack. We cannot prevent China's military modernization but the right policies will let us manage any risk that modernization poses.

HEARING COCHAIR REINSCH: Thank you very much. We'll proceed with Dr. Ahrari, and then we'll have questions for both. Dr. Ahrari, welcome.

**STATEMENT OF EHSAN M. AHRARI, PH.D.  
PROFESSOR, SECURITY STUDIES (COUNTERTERRORISM),  
ASIA-PACIFIC CENTER FOR SECURITY STUDIES  
HONOLULU, HAWAII**

DR. AHRARI: Thank you very much. Mr. Chairman and commissioners, thank you for inviting me to share with you my views on what appears to be a new and very significant wrinkle in the conduct of information war by the People's Republic of China addressing the world of Islam.

In the last two years of the post-9/11 era, China seems to have realized that the United States is facing an uphill battle in its war on terrorism in the world of Islam. This is decidedly a situation which in the estimation of China's leadership provides ripe opportunities for gaining new friends and new strategic openings to sell weapons, to sign energy contracts, and above all, to develop spheres of influence.

In addition, I wish to bring to your attention a recent asymmetric war that was fought between the Hezbollah of Lebanon and Israel in July-August 2006. Given the import of asymmetric warfare to the People's Republic of China, the Hezbollah-Israeli war of 2006 was a critical development. In my detailed testimony, I have focused on what I consider to be some major lessons learned from the military conflict by the People's Republic of China.

My premise is that considering the fledgling strategic partnership between China and Iran, the chances are high that China's asymmetric warfare specialists not only carefully studied the Hezbollah-Israeli war, but also consulted with their counterparts from Iran and Hezbollah about what worked and what did not work. That type of information will be incorporated in China's own operational and tactical countermeasures for any future potential military conflict with a powerful adversary.

No one is more of a voracious reader of the most recent trends in America's warfighting capabilities, in America's military and civilian

officials' handling of information war, public diplomacy and asymmetric war, than China's strategic community.

As a result of these studies, they attempt not only to adopt into their strategic repertoire what they consider to be some of the most relevant trends, but also to focus on developing proficient countermeasures.

In the realm of information war and public diplomacy, China's strategic thinkers are closely studying America's vulnerabilities related to its global war on terrorism in the world of Islam and are eager to adopt strategies that would make their own country look sympathetic to the Muslim plight.

In the domain of asymmetric war, an important aspect of China's strategy is to arm surrogates and to let them do the fighting with the United States or its allies. In this context, special attention should be paid not only to what they are supplying to Iran, but what Iran in turn is supplying to Hezbollah of Lebanon. This is a generic description of China's asymmetric war and information war strategies. Its specifics are spelled out in my detailed testimony.

We must watch with rapt attention China's own innovative approaches to information war and public diplomacy, its interpretation of our strategic thinking, and especially its capabilities and approaches to asymmetric war.

The underlying purpose in all these realms is to look for openings, points of vulnerabilities, and then maximize China's advantages.

Looking toward the future, a long term, if not permanent, aspect of China's approach to information war and public diplomacy is to enhance its strategic presence in the world of Islam, regardless of what happens in Iraq and Afghanistan. China seems to have recognized the power of political Islam and the implications of the struggle within Islam to the stability of a number of Muslim countries in the Middle East, South Asia, as well as Indonesia.

Criticizing America's approach to the war on terror, which China has originally supported, but about which it might be in the process of developing a nuanced position, emerges as a new dimension of China's public diplomacy. As China sees it, the Muslim world, especially the Middle East, is a region where the U.S. presence and influence is likely to experience increasing challenges in the coming years.

New alignments are likely to emerge as a Shia-dominated Iraq and Shia Iran are seeking new avenues of cooperation and rapprochement. The Sunni states of the Middle East, despite the fact that Sunnis greatly outnumber the Shias all over the world of Islam, are on the defensive in the wake of the rising influence of Iran, both inside and outside the Middle East. They are seeking new avenues of

resolving the Palestinian-Israeli conflict as well as of creating a rapprochement with Iran.

China seems to have decided that it will no longer leave the increasingly significant strategic affairs of the Middle East and that of the world of Islam largely for the U.S. presence and influence. This appears to be an extremely important development in China's continuing emergence as a power of global significance, presence and influence.

From the Chinese perspective, improving its capabilities in asymmetric war is a tool that sustains the high level of the concern of America's strategic thinkers and warfighters. As long as the United States and China do not start a military conflict, China envisions the asymmetric war-related research and development of new operational and technical maneuvers as an ongoing chess game with the lone superpower. China may not come out and say it; however, as an ancient civilization, it considers itself as one of the great champions of this game.

Thank you very much.  
[The statement follows:]<sup>7</sup>

#### **Panel V: Discussion, Questions and Answers**

HEARING COCHAIR REINSCH: Thank you very much. Thank you both. Commissioner Wortzel.

HEARING COCHAIR WORTZEL: Dr. Lewis, Dr. Ahrari, thank you very much for being here and sharing your years of research and expertise with us.

Dr. Lewis, one of the comments you made in your oral testimony, and I think I'm quoting it accurately, is about the improbable likelihood of "an electronic Pearl Harbor."

So I'd like to hear from both of you, if you care to comment, Dr. Ahrari--why do you think this is improbable and why a devastating cyber network attack would not amount to an electronic Pearl Harbor?

DR. LEWIS: Thank you. That's a great question and let me note that my written testimony has some explanation of this. The case I look to in that one is, "Could China use cyber weapons to block carrier battlegroup from deploying to Taiwan?"

What I have done for the past few years is try and look at the actual degree of vulnerability comparing cyber weapons, say, to air power which is the earlier asymmetric weapon. The airplane would be able to always get through. You could attack critical infrastructure, and this is strategic air power, that you would be able to win a war or

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<sup>7</sup> [Click here to read the prepared statement of Ehsan M. Ahrari, Ph.D., Professor, Security Studies \(Counterterrorism\), Asia-Pacific Center for Security Studies, Honolulu, Hawaii](#)

defeat an opponent without having to actually engage in conventional clash of armies.

The theory grew up after World War I when conventional warfare didn't seem to be working so well. When you compare cyber weapons to kinetic weapons, to explosives, they don't compare very well. Why is that? The first reason is that we are not as interconnected as we might think.

There are a few networks that are attractive targets. The electrical power supply, very interconnected, possibly a target for cyber attack. I tend to discount that one because everyday the electric companies will tell you their computer networks are probed thousands of times, and yet we have never seen anyone be able to do this.

You're more likely to experience a blackout as a result of trees or labor problems than you are from cyber attack.

COMMISSIONER FIEDLER: Never heard of a blackout because of a labor dispute.

DR. LEWIS: I can give you an example, but I won't, if you wish. The other thing to ask is the resiliency of these networks. How quickly does it take them to recover? And the answer is we know that the electrical networks are really good at recovering, that they can usually restore service within two or three days, especially since the cyber attack doesn't do any physical damage.

Financial networks, another good target, a broad target, interesting to attack. What we found in that case, though, is that again different parts of the financial network have different levels of security. A classic example was a worm that was released on the west coast a few years ago. One large bank chain had all their ATMs go down. Well, that's the end of the world.

However, its competitor, another large bank chain, didn't suffer any disruptions at all, and we can see the same thing in transportation, in a whole series of interconnected networks. Because we are not dependent on a single company, because there are multiple companies, some will continue to operate and some won't.

The degree of degradation is smaller than a physical attack and the time to recover is shorter. So that's a very long answer, but it turns out to be very difficult to achieve lasting damage or indeed noticeable damage using cyber weapons.

DR. AHRARI: Sir, in my previous life at the National Defense University, I was Director of Information Ops, so my information is a little dated maybe. But talking to the bankers and all kinds of people, I was persuaded that our systems are very redundant. I don't think we have to worry about any kind of a massive attack from China or from anybody else.

What worries me is computer hacking. What worries me about

the Trojan horse-related technologies is that they are extremely widespread. I go to India quite often and I see these technologies are being sold on the sidewalks. We have to be concerned about these types of technologies.

We have to enhance our knowledge of China's capabilities related to electronic jamming. We have to be developing countermeasures for China's persistent resolve related to finding our Achilles' heels, those soft points, which do not require enormous amounts of technological sophistication on their part. China's recent blinding of its own satellite, which was uppermost concern in yesterday's testimony of the Commander of Strategic Command is another case in point. We must be on the look out for those types of Chinese capabilities. We have to be constantly on guard, and determine which way they're heading and, most importantly, how to develop our own countermeasures to China's countermeasures. This is especially true about cyber warfare.

They get our military literature on a daily basis. They read the thinking, the new thinking, the current trends, and as good as they are, as brilliant as they are, projecting the long-term capabilities. We have to worry about which way they're heading. For instance, I'll give you one more example.

After studying the Gulf War of 1991, the PLA focused on electronic information warfare, electronic warfare, and so on and so forth. Then when they saw what we did in Afghanistan with high tech and low tech capabilities, they promptly incorporated that strategy to their corporate memory. So you see they are very capable and highly adaptive and they're working hard to be as maneuverable in terms of new thinking, as we are.

HEARING COCHAIR REINSCH: Thank you. Commissioner Bartholomew.

CHAIRMAN BARTHOLOMEW: Thank you very much. Thank you, gentlemen, both for your testimony today and for your service to our country over the years in your different capacities. I'll just note before I ask questions that yesterday General Cartwright raised the question of whether cyber attacks could be considered a form of weapons of mass destruction. I think it's an interesting question.

Dr. Lewis, you sound a whole lot calmer about the whole thing, if you parse it out. But I was wondering since these probes are taking place all the time, people are clearly interested in trying to create a mechanism to bring things down. Whether they succeed or not is another question.

I have a question for each of you, but if you want to answer with each other, that would be great. Dr. Lewis, first, I wanted to know, why should we consider that asymmetrical is second-best? You said

that. If essentially a country or a party can disarm its enemy through an asymmetrical attack and they know that they can't beat them with in a conventional fight, why wouldn't they go the asymmetrical route?

DR. LEWIS: There are a couple of reasons for that, again, another good question. The first reason and probably most important reason is that a lot of the result of the conflict depends on not only the capabilities that a country brings to the fight, the equipment it has, its strategic abilities, its training, all the traditional things you think about, but a lot of it has to do with will.

One of the things people routinely miscalculate, including the United States, is the effect of some asymmetric attacks on the target population. The effect is usually to solidify resistance, to encourage people to continue the fight, and if you haven't actually badly damaged their abilities to continue to fight, all you've done is annoy them, and what many of us call cyber attacks is not weapons of mass destruction but weapons of mass annoyance.

And that's, I think, one of the reasons asymmetric attacks can be second best is that you are doing something that doesn't really change the balance of forces that much and may actually only encourage your opponent to resist even more strongly, something to think about.

The other thing is you do have to ask, and again this points to the issues of redundancy and resiliency, is if I'm not destroying weapon systems, if I'm not eroding your capacity to fight, if you have the ability to recover quickly from my asymmetric attack or if my asymmetric attack while damaging does not eliminate your capability, which is I think the case in satellites, then I'm not really that much further ahead.

The key to victory remains pretty much conventional warfare, forces on the ground, air power and the related things you all know about.

CHAIRMAN BARTHOLOMEW: Two comments or thoughts on that. I don't know whether I'll get to go to a second round or not.

HEARING COCHAIR REINSCH: There will be a second round.

CHAIRMAN BARTHOLOMEW: Oh, great. So I'm going to pursue this and then I'll ask you, Dr. Ahrari, in my second round.

One is this concept of weapons of mass annoyance. I just find myself thinking that prior to September 11, indeed that might have been the response. But part of terrorism, of course, is injecting uncertainty as well as terror. I say that only because I happened to be in New York City when that tree fell in--where--Ohio and brought the electrical grid down and the first thought that everybody had was something had happened, and I ended up having to use my cell phone to call down here to Washington, D.C., to find out if somebody could watch CNN and tell me if there was something I needed to be

concerned about.

It was just a natural response on all of that. So I just wonder whether the analytical ground has shifted in the fact that there is a psychology that goes along with all of it?

DR. LEWIS: Let me try and answer that, which is that it's always possible, and I think as I look at some of our European allies, I wouldn't think they would react perhaps as robustly as we might hope to an attack like this.

The New York blackout, though, is a good example, which is that the population behaved very well. They were calm, they were orderly, there was no rioting, and when you look at our military capabilities or our economic capabilities, there was no immediate effect on our military capabilities. There was no long-term effect on our economy.

If that had been an attack, the attacker would not have been better off three days later, and if he had been discovered as an attacker, he or she, he would have actually been much worse off. So when I look at this, I say, what are the political things the U.S. can do to make sure that the population responds in this robust fashion, and what are the things we can do to build in additional redundancy and resiliency?

New York provides another classic example. As you fly into LaGuardia, coming from the south, the port side of the aircraft--you'll see a power plant on the bank of the Hudson. That plant is being closed, but it is still operational, and you had the anomaly of a perfectly fine and working power plant in the middle of New York City not connected to any of the police stations, hospitals, subways.

It is things like that we have to think about. How do we make our system more resilient to face these kinds of attacks? But for those reasons, we are already relatively resilient. Our population is relatively strong and we have a great deal of redundancy. I tend to not worry about these things so much.

CHAIRMAN BARTHOLOMEW: One more point, and that is according to Chinese battle theory, the best thing is to beat the enemy before you have to meet them on the battleground, be that economic issues or something asymmetric.

DR. LEWIS: Can I just make one point on that? And that's one of the points I wanted to conclude on in my testimony, which is people often have strategies going into wars that they think are really good, and the famous line is no strategy survives first contact.

I wouldn't want somebody to think that--you hear this all the time--the U.S. is this, the U.S. is that. We don't want our opponents to miscalculate. They might think they can find that kind of advantage and I would not want them to believe that would be sufficient for them to take the risk of starting a conflict, because I don't believe that

advantage is there.

CHAIRMAN BARTHOLOMEW: Dr. Ahrari.

DR. AHRARI: Before we get too far away, I don't think I have too much disagreement with my colleague, but it's hard for me to accept the proposition that asymmetric warfare is second-best strategy for China. China knows that on a force-on-force basis, it has no chance to fight and win against the United States.

In the realm of military R&D, China is not going to catch up with us. Even in year 2025, those who say that it will catch up with us, they assume that while China is making all the progress, and we'll be sitting and resting on our laurels.

So knowing that, China, in my estimation, envisions asymmetric war as its niche. In the meantime, it will continue to look for vulnerabilities, and will focus on developing offensive measures in order to inflict maximum damage in the wake of a military conflict. As we develop highly sophisticated military platforms, China is fully aware that all sophisticated platforms also contain weak links or vulnerable points. They are systematically studying those platforms using as many sources of information for developing countermeasures. Even in UAV warfare China is constantly developing countermeasures.

I would love to see what kind of exchanges China and Iran have made in the aftermath of Hezbollah-Israeli war in terms of UAV warfare, drones, and so on and so forth. So I don't disagree too much with my colleague, but that asymmetric war to them is not their second-best. Probably it's their best while they're still trying to catch up with us technologically, knowing fully well that that might be an unwinnable proposition for a long time.

HEARING COCHAIR REINSCH: Thank you. Commissioner Shea.

COMMISSIONER SHEA: Thank you, both of you, for coming here and sharing your thoughts. I have a number of questions. My first question was I think partly answered in response to what Commissioner Wortzel asked you, but let me just ask you again and maybe get a fuller response.

We heard during our hearings yesterday and today a lot about how the Chinese are probing our vulnerabilities, probing our seams, looking for our Achilles' heels. What do you think the Chinese think are those seams, vulnerabilities, Achilles' heels?

DR. LEWIS: The one that I think I touched on it briefly in my written testimony, and I hope the Commission has gotten other experts to talk about this because this is a little outside of my field, but when I am in discussions about what the Chinese might be trying to do, I would look at their efforts to come up with weapons and tactics to destroy aircraft carriers, and they're putting a lot of effort into that.

They have thoughtfully purchased all the work that the Soviets put into defeating aircraft carriers and which the Russians have continued. I think that that would be, if there was a conflict, I would be afraid that even a short conflict over Taiwan, I would be afraid that we would lose an aircraft carrier or two. And I think that's the one that concerns me the most is the high speed missiles, the submarines, the aircraft platforms, the other things they're doing.

That's a more traditional military approach, but it is one where there are vulnerabilities. We've operated in a way with impunity; no naval vessel has been sunk in decades. That's the kind of asymmetric attack I worry about.

DR. AHRARI: I think Dr. Lewis is right on the money. The PLA is fully focused on our aircraft carriers, with a view to developing asymmetric techniques to cripple them in the wake of a military conflict. It is developing anti-ship missiles of all potency. The PLA is also developing its capabilities in the realm of UAV warfare, drones and related technologies. They are also diligently studying our tactics in the Iraqi and Afghan theaters of war, and also Israeli's own operational and tactical measures against Hezbollah in July-August 2006.

In fact, my sense is that whatever technology the PLA has purchased from Russia and other sources, it is also reflecting about the ways of using it against the U.S. forces in a future military conflict.

COMMISSIONER SHEA: Dr. Lewis, you mentioned the issue of leapfrogging, the concept of leapfrogging. What types of technology are the Chinese looking at under this leapfrog concept? Is it nanotechnology or what do you think their thinking could get them suddenly beyond us in certain areas of capability?

DR. LEWIS: I think some of it, as Dr. Ahrari has mentioned, is on the aerospace side, unmanned aerial vehicles, missiles, tactical missiles. They've put a lot of effort into that, as you know.

I think on the information warfare side, they're continuing to explore the ability to deceive or corrupt the informational resources that our military depends on. There are anti-satellite weapons. We know that the test, the kinetic test, that's like the cheapest and least interesting way to damage a satellite. So I would look at others. Whether it's high energy weapons, whether it's jamming or some other non-kinetic effect, I think they're looking at that.

Those are the three areas I'd look at. I don't think there will be a sudden breakthrough that will give them and, as Dr. Ahrari has mentioned, because of our lead in military R&D, there is no particular thing they're looking at, but missiles, aerospace, information warfare and non-kinetic anti-satellite weapons would be my top three.

DR. AHRARI: Actually, one of the sources for China's

technology transfer is Russia itself. So, I'm not sure whether Russia is going to be very generous about providing its top-of-the line technology to the PLA. The traditional rivalry between China and Russia is such that Russia will sell whatever it can. However, it will never allow the PLA access to its crown jewel technology. Otherwise, the Russian military will be fighting its own cutting-edge technology, if or when there is a military conflict with the PRC. This is the worse-case scenario, but the Russian military is quite mindful of it.

Just a brief observation regarding miniaturization. I'm not impressed with China's capability to miniaturize. So in terms of their lack of sophistication in miniaturization, I personally would not make any kind of bold statement, and of course Dr. Lewis has not made any statement on that point, but I'm not certain whether the Chinese military has made major breakthroughs in the realm of nanotechnology.

Perhaps they'll wait until that technology comes to them through Europe or through some other sources.

HEARING COCHAIR REINSCH: Thank you.

COMMISSIONER SHEA: Thank you.

HEARING COCHAIR REINSCH: Commissioner Fiedler.

COMMISSIONER FIEDLER: Thank you. I want to address the distance between annoyance and destruction which seems to be a new growing debate that we're about to have, and I want to also get into the question of second-best in the following way.

Let me pose a scenario that we've been talking about in this hearing and earlier hearings. The ability of the Chinese to delay the arrival of our fleet in the Taiwan Strait may be sufficient to present us with a fait accompli on the ground in Taiwan, therefore, weakening our will to proceed and, therefore, furthermore redefining "win".

And that's the concern that I have about the ability of asymmetric warfare. So now I'm seeking the distance between annoyance and destruction, right? One might be able to argue that it's closer to annoyance but effective enough. Would you comment?

DR. AHRARI: Sir, you're right on the money. I was reading a study a few years back, a specialist on China's warfare/war exercises, and he was talking precisely what you just mentioned. He said that all China has to do is either delay the arrival of U.S. warships or postpone indefinitely or even conduct some very, very small tactical nuclear, I mean explode some tactical nuclear weapons, and that will create ample chaos, uncertainty and fear for us to rethink our strategy. That's all the time that they want.

That might be one reason why they have stationed 750 plus missiles against Taiwan. So this is psychological warfare. This is test of will.

COMMISSIONER FIEDLER: All warfare is psychological to the

extent that we try to affect the other side's will to fight.

DR. AHRARI: Yes, sir.

DR. LEWIS: Well, it's a good point. That's clearly the game in the Straits. The Chinese have made it clear, intentionally or not, that they'll do something that combines missile attacks on Taiwan to eliminate their defensive capabilities followed by specially trained assault forces.

The Chinese have mockups of Taiwanese defense facilities that they practice in. They're visible from space so it's not a big secret. The other side of this, though, and if the Chinese could--they're clearly interested in the fait accompli. It won't happen before the Olympics. It may never happen, but that's the direction they're thinking in. And we need to ask ourselves in return, what can we do to delay them a few days because after a week or so, after five days, if the Chinese haven't accomplished their goals, it will be embarrassing, there will be international pressure.

They face similar problems. What I'd look at if I was doing this, it's not so much what can the Chinese do to delay us, but what can we do to deter them from thinking they can delay us? For example, if I was China, I would not have gone out of my way to irritate the Japanese because the Japanese are moving in a direction where they may not be as amenable as they would have been ten years ago to Chinese intervention in Taiwan.

I would ask what forces do we have in the region, in Guam and in Japan, and possibly even Korea, where we could intervene, and I'd want to say what is it that we could do to delay the Chinese, and that's where some of the things that we have, some of our advantages in space, a faster strike capability for the U.S. So if there were Chinese targets that we identified preparing to enter Taiwan, once the conflict had begun, we could strike them from a long distance.

Those are the kinds of things where we have some advantages and this is a game and we need to strengthen our advantages and reduce theirs.

COMMISSIONER FIEDLER: Thank you.

HEARING COCHAIR REINSCH: Thank you. Commissioner Wessel.

COMMISSIONER WESSEL: Thank you, gentlemen, for being here, and Commissioner Fiedler took one of my questions in terms of seeming that the earliest concerns about asymmetric warfare, what impact they may have on a potential Taiwan conflict.

But I want to also ask, it seems to me that most of the knowledge we have about Chinese cyber warfare efforts have really been based on reconnaissance so far. They have not really tried to bring down any of our military systems. Most of it seems to be mapping our routers, our

systems, trying to understand what the points of vulnerability are.

Has it gone beyond recon to any kind of adversarial efforts and how much do we really know of what their capabilities are?

DR. LEWIS: The knowledge of their capabilities is somewhat limited. There is classified knowledge and that might be interesting for the Commission to get a classified briefing on that. You're right to say, and all of you have been right to say, that they're engaged in an extensive testing and reconnaissance of our networks, and that means we don't know what might happen in a conflict, that they are looking for vulnerabilities. They may have implanted things that would give us concern.

So far we have not seen any tests. One of the thresholds I always look for, and it's a threshold they crossed in the anti-satellite effort, they've been developing anti-satellite weapons for ten or 15 years, and the threshold I always had in my mind was we have to take them seriously when they test one because then they'll be coming out of the closet.

They've come out. And the question is, "Are they doing the same on the cyber side?" Harder to tell. Somebody is testing it. We know there's been attacks at destabilizing the Internet. We know there's been efforts to break into--successful efforts to break into U.S. systems, so the testing is going on, and in some ways since we don't know what they can do, we don't even know who's doing it--it could be the Chinese; it could be the Russians; it could be a number of other countries--we have to focus more attention on our defenses.

COMMISSIONER WESSEL: You talked earlier about the redundancy in the business sector, and a lot of that is because of the totally separate business systems, ATMs, etcetera. Do you have the same confidence in our current military structure as it relates to backbones, et cetera?

DR. AHRARI: No, sir, I don't because they are focusing on our military system. They may not be focusing on our financial systems as much as they are focusing on our military system. So I think Dr. Lewis made a very good point--creating uncertainty. If I were a psychological warrior, I wouldn't be spending a whole bunch of time in telling the other side, signaling the other side what I have, as opposed to spending a whole lot of time creating uncertainty on the other side. So that is a very important variable.

Another point that Dr. Lewis mentioned that needs reinforcing is constantly mapping, constantly exploring, constantly looking for flaws. The more sophisticated we become, I submit to you that the more vulnerable we become, and that's what they're looking for. So that's where the problem is.

Since they would like to close that gap between the U.S. military

technology and their own technology, they are focusing more on finding anti-ballistic missile type of technology or countermeasures for deep penetrating bombs or countermeasures for anti-submarine warfare than maybe cashing some checks and breaking into some ATM machines.

COMMISSIONER WESSEL: Thank you.

HEARING COCHAIR REINSCH: Dr. Lewis, would you comment on the adequacy and effectiveness of the federal government's efforts to promote better cyber security in the private sector?

DR. LEWIS: This has been one of the more problematic areas for both this administration and the previous administration and in no sense have we made adequate progress. Part of the reason has been a desire, again in both this administration and the previous administration, to rely on the private sector. You hear the line all the time about how the private sector owns 80 percent of the infrastructure, and therefore we should leave it up them.

That's not a particularly good defense strategy because their response has been very uneven. Some sectors, the electrical sector, the financial sector, and I hear now the chemical sector have done very well at securing their networks. Other parts of the private sector have perhaps not done as well as we might hope.

The problems with the federal government are also extensive. I'd note that the Department of Defense is making a significant effort to improve its network security, and so there may be in the next few years a reduction of the vulnerability, but at the moment, we are exceptionally vulnerable, and we don't really have any adequate policies in place to address that.

HEARING COCHAIR REINSCH: If you're going to say that the reliance on the private sector to do the job for itself is inadequate, and I agree with you that's been the mantra for the last 12 years or so, how are you suggesting the federal government be more active in light of the fact that at the end of the day the things we're talking about really are all owned privately?

DR. LEWIS: There are a couple things you can do. The first thing is there are some networks where our national security interest is so high that the idea of regulation or federally mandated standards is not a bad one, and of course, this is something we've done in telecommunications for many years, really since the Eisenhower administration.

HEARING COCHAIR REINSCH: What other sectors would you suggest would qualify?

DR. LEWIS: The electrical power sector is a good example of an alternate way of doing these things. We're getting a bit in the weeds here, but there's both a federal regulatory body and an industry body

that looks at securing electrical networks.

These two bodies have been able to work together very successfully to come up with standards for electrical power operators to secure their networks. So this kind of thing, knowing that the federal government is interested and will enforce, perhaps, standards, but allowing the private sector to develop them and to amend them as necessary, it's different from the way we've done regulation in the past, but it appears to have been effective in this one sector.

So I would say in those places where we have really grave national security concerns, a more robust federal role may be appropriate. In most other areas, and this would be most of the infrastructure we're talking about, finding ways to energize the private sector response would be crucial.

It's worth making a third point, too, which is a lot of the economic activities in the country really aren't necessary from a military standpoint, in an immediate military standpoint. We should not get into regulating them.

One of the problems we have is a long list of critical infrastructures, many of which really aren't critical. Agriculture is a critical infrastructure. In what sense? Are you going to launch a cyber attack against a cow? Probably not. I'm making light of it, but a clearer definition of what really is crucial and an understanding of what we can do to secure that would be helpful. I'm not sure that's a good point either. We have two competing goals here. The one is where there is strong national security concerns--we want to ensure very high standards. Where the national security concerns are lower, we want to limit the scope as much as possible of regulation. And so finding a way to do that is very difficult, and I think that's part of why we're lagging a bit behind. This is a very difficult problem.

HEARING COCHAIR REINSCH: Dr. Ahrari, do you want to comment?

DR. AHRARI: Yes. I think he said it well. One of the things that I encountered in my previous life in talking to the private sector is that they were very much concerned about losing their trade secrets and they were not--there was a lack of trust on their part about talking to the government and government not giving their trade secrets away.

So those kinds of things, and then the third point, that they used to say, look, we're doing quite well by ourselves and you know we don't need government's help. We don't need government's regulation. So there was that feeling. So maybe Dr. Lewis has more information on that. I don't find any points of disagreement with him.

HEARING COCHAIR REINSCH: Okay. Thank you. Commissioner Wortzel.

HEARING COCHAIR WORTZEL: Gentlemen, thank you very

much. Are we able to electronically fingerprint any of these probing attacks that elements of the U.S. government and Department of Defense have suffered to specific organizations in China?

DR. LEWIS: The classic example is an event of at this point about eight years ago where defense computer networks were under attack. The defense investigators came to the conclusion it was China. There was discussion at high levels within the department of how we should retaliate against China and before those discussions concluded, it turned out to be two teenagers in Mendocino, California who were launching the attack.

It's very difficult to track this down. The reason for that is that a skilled attacker, as you are aware, will not only seek to disguise their tracks, but they will seek to have tracks lead up to someone else and everyone knows we're suspicious of the Chinese, and so I'm relatively certain that any country that probes us will try and leave tracks pointing to Beijing.

The Chinese also will exploit this, but one thing to ask is, "If I'm launching a network attack, where do I have to be, and I could launch it from my home country or could I go to a place like Malta, Cyprus, Panama, other European destinations, and launch from there?" Places that have adequate business facilities, adequate telecommunications facilities are good places to set up a front company and use that as the basis.

So there are times when we are fairly confident that it's China, there are other times where we have no idea, and there are times when we're fairly confident that it's China that I think we're mistaken. So you have three categories of answers. That said we know the Chinese are doing this. Sometimes perhaps if we think it's a Panamanian attack, it's more likely to be China.

HEARING COCHAIR WORTZEL: I still have some time so I want to probe further on this one because it's pretty important. There are 1.3 billion Chinese. Are there specific organizations inside the People's Liberation Army or controlled by Chinese authorities that we can identify that might be involved in these kinds of efforts?

DR. LEWIS: Yes, I think there are. There are clearly both military organizations and intelligence-related organizations that are involved in exploring cyber weapons, exploring asymmetric attack.

HEARING COCHAIR WORTZEL: I'm also interested in a combination of effects. I'd like to know, in a military operational sense at the campaign level, a combination of cyber network attacks and kinetic attacks involving missiles, whether the use of cyber attacks would improve the likelihood of kinetic strengths?

DR. LEWIS: The conflict that I look at in trying to figure some of this out is the conflict in Kosovo because the Serbs had a number of

advantages. They had an extensive espionage network so that people parked outside of runways in Europe, in Italy, for example, and could use their cell phones to call when aircraft took off.

They had cooperation from perhaps, it is alleged that they had cooperation from some of our NATO allies. They made an extensive effort at deception and denial and they also used informational attacks, cyber attacks or cyber probes. The net effect of all these things was not to actually prevent any U.S. air strikes, but it was capable, and not particularly the cyber part-- as the larger deception and denial part, it was capable of greatly reducing the effect of those attacks. So I think, as Dr. Ahrari has said, that the Chinese are very eager to learn from the experience of others. We know they talk to people routinely to see how they defeated it.

In that case, though, and admittedly it's a bit old now, it wasn't the cyber part of the Serbian effort that had the most payoff. It was the other parts: the deception and denial, the confusing of signals. And I wonder if the Chinese aren't looking in that direction.

HEARING COCHAIR WORTZEL: Thank you. Dr. Ahrari, anything to add?

DR. AHRARI: No, sir.

HEARING COCHAIR REINSCH: Commissioner Bartholomew.

CHAIRMAN BARTHOLOMEW: Thank you again, Mr. Chairman. I'm going to move to Dr. Ahrari, but there are a couple of things, Dr. Lewis, that you said that I feel like I can't leave at least unchallenged, not the least of which is I know you were being a little facetious on cyber warfare on a cow.

Distribution systems for our agricultural products are all very high tech now, and most of our food that is being produced is not being produced by somebody with 100 acres and a mule. It is done on a scale of hundreds of thousands of acres with irrigation systems and so it's not quite as simple as that. You know that.

Dr. Ahrari, your comments that Russia is not going to sell its crown jewels of technology to China doesn't preclude the Chinese from stealing the Russian crown jewels of technology, which I presume they're trying to do just as they're trying to do that with ours.

I want to shift gears a little bit and go to this concept that you were talking about, the Chinese using military assistance to Iran, which we know some of which has gone to Hezbollah, and your sense of how much of this is proxy war and how much of this is that the Chinese government has a lot to gain by being close to the Iranians? And then the transfers to Hezbollah, are they something the Chinese overlook or they facilitate but isn't necessarily the end goal?

That's one piece of it.

The second piece of it is this: yesterday we heard about Chinese

low production cost of weapons, and the example that was given is that it costs us a \$1,000 for an assault weapon, and a Chinese assault weapon costs \$10.

Do you think that the Chinese strategy is going to be sell weapons anywhere any time, just to make the money, or is it more likely to be a targeted strategy of providing weapons? Fighter planes, there's a huge differential in the cost of production there. Is it going to be more targeted sales to create more proxy wars?

DR. AHRARI: China is following a targeted strategy of supplying weapons to actors that are capable of waging proxy wars. Iran might have a plan of using Hezbollah as a proxy. But as it turned out, since Iran and China are close, that works for both of them. Iran's use of Hezbollah also works in favor of China. So, the fact that there was an asymmetric war of an immense magnitude, at least in the political realm, even though Israel did not lose in the strict military sense, but the symbolic effect that Hezbollah, a ragtag fifth rate force—which is not even an Army--survived, it is perceived as a “winner.”

Obviously, China has extracted a number of valuable lessons. That type of knowledge is added to China's own operational and tactical maneuvers to use anti-ship missiles, cruise missiles and the UAVs. Iran's latest military exercises also used anti-ship missiles. The Iranian forces are obviously involved in developing naval countermeasures against the awesome power of the U.S. submarines.

So, we have to focus on these types of techniques. China's presence in Africa, as I envision it, is the beginning of a brilliant mega-strategy. Qaddafi is no longer a bad boy, but there are lots of other actors who are willing to challenge the status quo in Africa.

Let's take a quick look at Central Asia. The fact that we were ousted from Uzbekistan was a *coups de grace* on the part of China, and, to a lesser extent, for Russia. China has always said—and we laughed when they said it—that it envisions the Shanghai Cooperation Organization (SCO) to acquire a role similar to that of NATO someday.

They were quite serious in that observation. So creating a challenge for the United States in Central Asia might be China's first salvo in enhancing the political clout of the SCO. China is focused on the areas where the war on terror is intense. They're focused on the Levant, and on South Asia. They are enhancing their presence in Gwadar naval facility in Pakistan. That is significant development for the United States and India. It is fascinating how they are developing these mini-strategies for the evolution of a mega-strategy to fight asymmetric war.

We should remember that, in their view, the United States wants to contain China. For them, that strategy cuts both ways. They seem

to be saying, we are going to try to contain you in different parts of the world.

HEARING COCHAIR REINSCH: Commissioner Shea.

COMMISSIONER SHEA: My question was for Dr. Ahrari. I think he partially answered it in response to the chairwoman's question, but maybe you can elaborate on it just a little bit more. You mentioned that China watched the Israeli-Hezbollah conflict very, very closely and looked at what worked and what didn't work, and could you just elaborate on that? What lessons did the Chinese learn from that conflict, and have they internalized that into their own planning?

DR. AHRARI: I think, first of all, the overall lesson is that asymmetric warfare is going to be much more effective now that the United States is facing an uphill battle in the Middle East or in South Asia because you see, they are studying, they're watching the debates, domestic debate here in the United States in terms of the long-term implications of Iraq war, the long-term implications of Afghanistan war, and drawing lessons in that regard.

Regarding the Hezbollah-Israel war, I would say, as I have said a few times before, my sense is that they're focused on anti-ship missiles, cruise missiles, UAV drone technology – those kinds of technologies. And in fact, I think I've developed ten or 12 points in the table that I give you in my detailed testimony. Those are the lessons we have to be kind of looking at.

In fact, if I had more time, I would have probably developed 20 lessons because I was really studying--what I'm interested in is the evolution of China's asymmetric warfare doctrine. A lot of people talk about doctrines, but they don't even define doctrine, much less describe it in the context of what China is doing.

So my concern was if I had more time, I would have probably developed a pretty large version of the doctrine, but I start with those ten lessons if you take a look at that.

COMMISSIONER SHEA: All right. In the written testimony. Thank you.

HEARING COCHAIR REINSCH: Commissioner Fiedler.

COMMISSIONER FIEDLER: I'd like to get into some definitional problems. If I were to ask you what would count as asymmetric exports, how would you answer me? Right. We know what conventional weapons exports are. What would you classify as asymmetric warfare exports?

Also, how do you proliferate asymmetric warfare, whether it's doctrinal, as you say, or what are the ingredients that would allow a much smaller state than China, i.e., its proxies, to conduct slightly higher than annoyance level asymmetric warfare against the United States on sufficient scale, say, in ten places simultaneously, that might

have a much more dramatic effect on our ability to respond somewhere else in a conventional way?

The issue of words is a problem in our policy; right? Exports, asymmetric, weapons, proliferation, and we're having this discussion about new forms of warfare, so I'm beginning to believe that we have to create some new lexicon.

By the way, I would say to you, generally speaking in terms of making the American people understand what we're talking about, that we find a word other than "asymmetric," just as a matter of understanding.

DR. AHRARI: One commissioner mentioned selling low tech weapons to anybody who's willing to pay for it.

COMMISSIONER FIEDLER: That's fairly traditional.

DR. AHRARI: Asymmetric war describes the tactics and techniques used by a weak actor against an adversary who is technologically advanced. It is also called low-intensity conflict. This type of conflict has intensified in the post-9/11 era. It is continuing in the trans-Sahel area of Africa, the Horn of Africa, Sri Lanka, the Assam province of India, etc. Central Asia might become a battleground of asymmetric war in the coming years, since it is an area where small arms trade and opium trade is likely to continue. Wherever troubles are, they have to sell weapons, and create proxies, and using, hoping that those proxies would turn out to be effective, as the world, as the Arab world, at least, has seen that Hezbollah has become very effective.

Using that example--I studied not necessarily the specifics going to back to your question as much as the psychological impact of that warfare. So, that plays a very important role in the emergence of China's doctrine.

COMMISSIONER FIEDLER: I agree.

DR. AHRARI: I'm not saying that they are teaching the doctrine to Nigerians or Algerians or anybody else. It's just that those who are developing doctrines in China, those brilliant minds in China's war colleges and in places of that sort, they are studying and drawing lessons and drawing strands of thinking in terms of evolution of their own asymmetric war. Call it low intensity war. Call it what--tie down the Gulliver, question the status quo.

Make the traditional status quo in sub-Saharan Africa or in the Middle East as shaky as possible. That's very much part of asymmetric war.

DR. LEWIS: Let me touch on your export word here, and I agree with you. I wish there was a better word than asymmetric. But if anyone finds it, please let me know. I don't actually pay that much attention to exports anymore. As some people have indicated, I used to

look at them a lot.

DR. LEWIS: But exports aren't that useful a variable. And this is something that I think has changed in the last ten years. It's changed because of the integration of economies in the world, the creation of global supply chains and the appearance of a huge global market for parts and more importantly for services. The export model we had from the Cold War was very much on a national industrial basis sending hardware to other places. It just doesn't make any sense anymore.

You have a global industrial base that even we now depend on and you also have this issue of commercial services. So one of the tests we did a few years ago at CSIS was to ask, if you were a small country and you wanted to mimic the U.S. in space, could you buy it on the open market? Could you buy the remote sensing? Could you buy the communications? Could you buy the precision, time and navigation services?

The shorter answer is you couldn't get as good as the U.S., but you could get pretty darn good. Right. And I think that's the short answer, is that between the ability to access services, the ability to tap into a global market that we no longer control, the export issue is less relevant. That's the trend we're moving in.

COMMISSIONER FIEDLER: I was not thinking about it so much from a control point of view as from a definitional point of view. What is it that one country could give to another to enable one small country, one big country to a small country, to enable it to conduct more effective asymmetric warfare against the United States?

DR. LEWIS: I think the short answer, as Dr. Ahrari has indicated, is they could give them a skill set, the ability to do the kind of denial and deception that the Serbs did, for example, and they could give them low end precision weapons, precision-guided weapons, so surface-to-air missiles, anti-tank missiles. They could give them more advanced remote weaponry, as the Iranians have allegedly done in Iraq.

Those are the things where if you wanted to increase the ability of an insurgent force or a smaller force to resist, giving them SAMs, giving them ATGMs, giving them high-powered explosives, and giving them the skills to use those and evade our sensors would be the best thing you could transfer.

COMMISSIONER FIEDLER: Do we have any evidence the Chinese are doing any of that yet? Let's start with training of other people?

DR. AHRARI: Well, I think it is worth looking into in terms of how many Iranians they have trained, because Iran has definitely given a lot of technology, a lot of know-how, training and so on to Hezbollah, number one.

Number two, as Dr. Lewis pointed out, Iran is accused of exporting similar type of skills and low-tech weaponry into Iraq. Now, I have not seen any evidence of Iran's involvement or China's involvement in Somalia. But if I were a Chinese asymmetric warfare specialist, I would be advising the Chinese government definitely to look at that theater as well. See, the purpose is not to fight the United States. The purpose is to create ample logjams, ample uncertainties, ample shakiness for the lone superpower.

In the Trans-Sahel region, we might have a slight advantage. But Somalia is too shaky to draw any conclusions. On a long-term basis, United States is notorious about not committing itself to a place of conflict, a place of violence, a place of turbulence long-term, if not on a permanent, basis. So that is the advantage from the perspective of those using asymmetric tactics.

COMMISSIONER FIEDLER: Thank you very much.

HEARING COCHAIR REINSCH: Thank you, commissioner. Dr. Lewis, you had an interesting phrase in your testimony that I'd like you to elaborate on. You referred to rebound risk. Can you explain a little bit more about what that means and perhaps cite an example or a hypothetical?

DR. LEWIS: Sure. Again, starting from this idea that we are in a more integrated economy than we have ever been, there has always been trade. We are beyond trade now so that companies connect with each other, globally in a way that's unprecedented, and so a U.S. manufacturer will depend on a global supply chain where Chinese companies, European companies, companies from--those would be the main two regions--maybe companies from South America will all be sending the parts you need to make a product. The same is also true for China though.

It's not that the Chinese have an IT industry. It's that they have a share of a global IT industry, and if they were to disconnect themselves from the global supply chain, their companies would also have trouble.

The Chinese are part of the global financial network. If they were to disturb the financial network, they would put their own assets at risk, so there are some places where because of the connectivity, we are in the same boat, right, and so if you start drilling holes in the boat to affect your opponent, you may have to bail as well as others.

Let me point out that there are some places where that's not true, and one of the things that's interesting is what some people call the "balkanization" of the Internet, an attempt to build off a portion of the Internet that will be independent of the rest of the global network, and that's one where you could see them perhaps launching an attack and still maintaining your own national capabilities.

But it's hard to see Chinese leaders attacking banks in which they have their own large deposits, to give you an example.

HEARING COCHAIR REINSCH: You're suggesting that the Chinese leaders as individuals have large deposits?

DR. LEWIS: Yes.

HEARING COCHAIR REINSCH: I think we'll let that one stand and not go down that road.

DR. LEWIS: Perhaps their families.

HEARING COCHAIR REINSCH: I think there were some other countries where that was more characteristic, but who knows? Anyway, let me go back to your last exchange with Commissioner Fiedler. I also interpreted his question as relating to export controls, so let me pursue that for just a second and then we'll wrap up.

It seemed to me that you were close to saying that they don't really make all that much difference anymore. I'm just curious if that was really what you were getting at?

DR. LEWIS: There are some areas, weapons, weapons-related technology, proliferation-related technology, where they're still very important. In other areas, they have greatly decreased utility. Once you get from those specific areas, and the arms embargo on China is a good example, would it make any sense for the U.S. to lift our arms embargo on China? No, it would be completely senseless.

Would it be helpful if the Europeans lifted their own arms embargo, whatever is left of it? No, that would be definitely something it's impossible to imagine anyone claiming to be an ally and doing that. But once you start moving away from the most military relevant or the proliferation relevant technologies, it doesn't make that much difference anymore.

HEARING COCHAIR REINSCH: Thank you. Commissioner Fiedler is going to have the last, second to last word.

COMMISSIONER FIEDLER: The measurement of risk, as you described globalization and its impact on the production and manufacture of products, whether they be commercial or defense industrial or defense related or what we used to term dual-use, that it seems to me that it's harder, it's most certainly harder to control.

One can say that it is impossible to control or one can narrow the attempt to control certain sorts of exports. While my question wasn't directed to export control, it had export control implications. I will admit that. I also think that there's a measure of throwing up our hands and saying that it is too difficult to do, and that we don't know what the implications of that are for our national security in easy ways anymore.

So I am arguing actually for a prioritization and a narrowing and a serious discussion of risk, and I do understand that that discussion

differs when we are talking about countries like China versus Somalia. Because these countries represent different risks.

I would hope that we are not, quote-unquote, "so integrated that we cannot measure risk anymore." Do you have any comment?

DR. LEWIS: It's a good point. I was trying to work on a metaphor, and I think I'll just give up on it, about playing football in a train station, which is more like our security situation today. For me, the key to preserving U.S. security is for us to build better stuff and to use it better than our opponents, and in that sense, since we are dependent on a global supply chain in many, many things--aircraft, satellites.

COMMISSIONER FIEDLER: And not give it to them; right?

DR. LEWIS: The question is, will they be able to get access to it somewhere else?

COMMISSIONER FIEDLER: Right.

DR. LEWIS: And so for me, you want to concentrate on the strategy that has the greatest payoff. I would prefer to see us maintain our leadership in defense-related science and technology and maintain our leadership in having a military that's capable of thinking of new ways of using those technologies.

COMMISSIONER FIEDLER: Are you confident that our current manufacturing base and its sort of apparent constant diminishing helps us to that end?

DR. LEWIS: It's unclear, Commissioner. There's evidence that suggests that the problem is overstated, at least in the near term. There's also evidence that suggests in the long term it might be a difficulty.

So we have just begun to ask ourselves, how do we live in a post-industrial world. The example I use, I do have a metaphor that works. When everyone--it's a different one that the train station--

COMMISSIONER FIEDLER: We'll judge whether it works.

DR. LEWIS: Think of Belgium. Belgium has never had its own defense industrial base. They've always had to depend on others to supply their weapons, and they've never expected they would build their own airplanes, tanks, and so on. We are becoming more like Belgium. We are not yet Belgium thankfully, but we will come to a point where we will depend on something other than a national defense industrial base, and we need to think about how we'll deal with that.

COMMISSIONER FIEDLER: So how long did it take the Germans to take Belgium?

DR. LEWIS: How many Belgium jokes am I allowed?

CHAIRMAN BARTHOLOMEW: How many times has Belgium been overrun in its history?

DR. LEWIS: True, and that would I think get us back to issues of political will, redundancy, resiliency, which may not involve the industrial base anymore.

HEARING COCHAIR REINSCH: I think we've wandered into the land of inappropriate metaphors, and it's time to thank the panel for its comments and for what I think was a good exchange. Thank you very much.

We'll take a very short break while the second panel is coming up and taking their seats. Thank you.

[Whereupon, a short recess was taken.]

#### **PANEL VI: THE PLA'S OBJECTIVES IN SPACE**

HEARING COCHAIR REINSCH: We'll come back to order. Thank you very much. Our second panel consists of Dr. Michael Pillsbury, consultant to the Department of Defense and the former Assistant Under Secretary of Defense for Policy Planning, a title that only the United States Government Defense Department could come up with. Eric Hagt, Director of the China Program at the World Security Institute, and previously a visiting researcher at the Freeman Chair in China Studies at the Center for Strategic and International Studies.

And then, finally, Mr. Dean Cheng, who is currently Senior Asia Analyst at the Center for Naval Analysis Corporation, a not-for-profit think tank, where he specializes in Chinese military issues with an emphasis on the Chinese space program.

Since you were not all here for the first panel. I'll mention what I said before. We're asking you to confine your oral statements to seven minutes. You'll see by the lights that when it turns yellow, that means you have two minutes left. Your entire written statement will be placed in the record, as will your oral statement, as will the transcript of the exchange that follows.

We also, for this panel, have written testimony submitted by Mary Fitzgerald, who is a Research Fellow at the Hudson Institute, and although she could not be here personally to testify, that will also be included as part of the hearing record for this panel.

With that, let's begin. Why don't we go in the order in which I introduced you, if you don't mind. Dr. Pillsbury, you can go first, and then Mr. Hagt, and then Mr. Cheng, and then we'll do questions after that. Thank you.

#### **STATEMENT OF DR. MICHAEL P. PILLSBURY CONSULTANT, DEPARTMENT OF DEFENSE, WASHINGTON, D.C.**

DR. PILLSBURY: Thank you very much. Let me express my appreciation for being invited here to talk about the questions your letter and your hearing have raised.

First, of course, I represent nobody but myself. And secondly, I wanted to advertise in my first paragraph of my statement here that there is a tool kit of concepts and ideas that have been used by a small office in the Defense Department called Net Assessment over the last 30 or more years for how to understand some of the questions that commissioners were asking yesterday.

That is when you are denied information, in that case by the Soviet Union, when you're denied information and when there is a lack of transparency, how can you make national security decisions and investments of billions of dollars wisely without waiting, shall we say, for the intelligence community or for scholars to come in and tell you the right answer?

There's many more that I mention here--but a set of some of those tools where the creation of a range, often called a family of alternative scenarios of what might happen, where you say, okay, the most likely is this, but there are seven or eight more, they're very unlikely, but if they happen, one or more might be called killer scenarios and then you tend to focus on those in great detail.

It doesn't mean that that will happen. It often confuses the intelligence community and scholars when they hear worst-case scenarios examined. They think, well, that's not going to happen; that's the least likely. Well, that's correct; it's the least likely. But if it's a killer scenario, you want to buy a little bit of insurance, especially if it's cheap, and by having a range or a family of scenarios to look at, you get around the issue of not having as much evidence or insight as you might want to have into your opponent or possible opponent.

A second set of tools that was developed, mainly in the '70s, in the DoD, was to examine perceptions and miscalculations as a finite problem, not just say, gee, sometimes people misunderstand. We ought to have more communication, but to say exactly which miscalculations could be the most dangerous and exactly what could be done to reduce that list of the most dangerous miscalculations.

A third area of tools that were developed, again '60s and '70s, had to do with organizational theory. It's often taught in business school and only in business school for executives who want to manage a company. They want to know how will that company behave and Nobel Prizes have been given to the best thinking in the organizational behavior school.

It occurred to Net Assessment fairly early that when you talk about a foreign country's military forces or what its military goals are,

you're not talking about some sort of vague, the whole country; you're talking about a very small organizational reality of people in roles paid money with doctrine in their own heads who are doing, who are, let's say, driving a decision about how many Soviet tanks to buy.

It turned out there was a Soviet tank organization. People belonged to it. They had thoughts. They had their own school. And interviews showed that everybody deferred to the Soviet tank/armor people, and they got a huge share of the pie, and they did certain things with it.

But studying all of the Soviet Union wouldn't tell you very much about why they had so many tanks and why they performed in a certain way.

Another broad area is psycho-cultural insights. Net Assessment sponsored a study called the Operational Code of the Soviet Politburo, an effort to use a number of insights, mainly from anthropology and open source writings to say are there rules of strategy that the Soviet leaders tend to revert to, especially in a crisis, that would be different from what Americans or French or Germans or Japanese might do?

There are several more, but the idea was to be eclectic and to acknowledge you're never going to know enough about the problem. So that was in the whole field of diagnosis. And I understand from your questions yesterday, you have a lot of interest in the diagnosis of where is China going, especially in the military sense, but also in the sense of grand strategy.

But I thought today the best use of your time to squeeze the most out of my limited knowledge of China would be to focus on prescriptions in the area of space. That's our panel. So I made a list of ten for you.

I'll go through them very quickly. Since I'm down to two minutes, I'm going to just read the titles. The first one is military countermeasures. General Cartwright has detailed two days ago, not here, but two days ago in his statement, which I've attached the transcript to the end of this, about how the U.S. can strike Chinese anti-satellite capabilities first, if necessary, and, second, very quickly, if necessary, at the key nodes. This is quite an important statement coming from General Cartwright.

Second is the need for dialogue that the Commission itself has recommended. I provide some thoughts about exactly what kind of dialogue we need with the Chinese military in particular, but there are civilian leaders as well on ASAT issues.

In the open source writings I covered for the Commission it's always asserted the weaponization of space is inevitable and America is doing this now. This in my view is a misperception. The Congress has put limits for more than 20 years on U.S. weaponization of space.

Our F-15 ASAT firings in '84-85, actually limited from year to year how many could be done, what it could do. Congress has a deep role. The Chinese military seems to be unaware that we have blocked, we, the Congress, I should say, has blocked the weaponization of space.

Thirdly, intelligence challenge for uncovering signatures for ASAT is very difficult. It's worth a little bit of attention to the problem of what you're looking for.

Finally, number four, we should not approach the matter unilaterally. The Japanese are in the process of launching four reconnaissance satellites themselves. They have two up now. The Indians are working. We have a very great opportunity here for multilateral exchanges with the Chinese on the issue of their misperceptions that the weaponization of space is inevitable.

Then on the issue of negotiating an agreement--point five here--the onsite inspection and verification issue has not been fully addressed yet, and there are some opportunities there and some good news from China. China has accepted 100 visits by the inspection organization of the chemical weapons ban. So the old notion that China will not accept onsite inspections for arms control agreements is no longer correct.

Number six is sort of a repetition of how tragic it is that they misperceive our intentions in space.

Number seven, the Chinese view seems to be that American missile defense could expand beyond the current idea of, say, 30, 40, 50 interceptors up to far more, like the Sam Nunn level of 100. This seems to give them an incentive for their ASAT activities because they explicitly say part of ASAT is to destroy U.S. missile defense, therefore rendering Chinese nuclear forces secure.

Number eight; I mention the details of export controls, what would be required to try to choke off some of the U.S. help that's been given in the past in space.

Number nine is more details about something good that PACOM and STRATCOM are doing and the so-called track 1.5 exchanges, but these have not been as helpful as we might have hoped.

Finally, number ten is the issue what open sources can tell us. There's a tendency to dismiss open sources if you don't like the answer. And you see this in a lot of press coverage of this study in particular, for example. Theresa Hitchens gave a comment in one newspaper story saying, well, Pillsbury just picks individual, I've forgotten the exact noun, but it's like mavericks or fringe characters, and others accuse those who minimize the Chinese problem as doing the same thing, just cherry-picking out what they like.

I'm just saying this: that's true. That's the danger, but in fact

when there are so many Chinese writings by space experts and only the space experts, of whom there are very few, and the things seem to be consistent, this tells us something even though open sources are not definitive by any means.

Thank you.  
[The statement follows:]<sup>8</sup>

HEARING COCHAIR REINSCH: Thank you. Mr. Hagt.

**STATEMENT OF MR. ERIC D. HAGT, CHINA PROGRAM  
WORLD SECURITY INSTITUTE, WASHINGTON, D.C.**

MR. HAGT: I would also like to thank the Commission for inviting me today to talk about what I think is actually an issue of the utmost importance, and I believe that space security, both for the United States and China, is rapidly becoming a defining issue in the relationship because it is at the nexus of deeply held economic and security interest on both sides from globalization, economic development, national prestige, nuclear deterrence, as well as a potential conflict in the Taiwan Straits.

You've asked me to touch on several issues about China's program, and one of them was what preparations China has made for conflict in space. I would like to keep that brief because I think there are a lot of unknowns there still, but just to point out a couple of salient facts or points.

One is that in looking at capabilities or China's preparations, I think you need to not only look at capabilities, but China's institutions and its doctrine and how that's developing in the military space program, and I think there has been some shift in that area that is relevant to where China is going with its program, and I'd be happy to take questions on that later.

The second is that I think that the assessment of that is that there is still a lot of ambiguity there in China's preparations for space. We shouldn't lose sight of the fact that that may be partly due to a lack of transparency. But I think it also reflects China's uncertainty about its objectives in space.

Turning to the assessment of China's intentions, and I think the ASAT test recently goes to the heart of that discussion, intentions distinguished from capabilities need to take into account economic, political and strategic factors. And it is my assessment that on balance while there is a strategic logic for China to build ASATs and perhaps test them, there is on balance very powerful reasons for Beijing not to

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<sup>8</sup> [Click here to read the prepared statement of Dr. Michael P. Pillsbury, Consultant, Department of Defense, Washington, D.C.](#)

or to avert a military race in space.

I think that the test and sort of assessing the test, and this is my, well, speculation, it's my analysis, and we don't know for sure, but I look at it as a confluence of two thresholds that China perceives. The one is through U.S. rhetoric and action, China has concluded that plans for space control and dominance is inevitable and will lead to the weaponization of space.

With U.S. military space program intimately connected with the multi-layered missile defense system, it creates a lot of strategic angst in Beijing over China's nuclear deterrent and the strategic balance in the Taiwan Straits.

The second threshold is that China itself stands at the cusp, I think, of becoming a deeply invested player in space for reasons commercial manned space, exploratory space and military space.

China has come to see the current strategic balance in space as intolerable and intolerable to its core national security interests and its sovereign rights to access space. I think the ASAT was a response to this primarily.

Why Beijing's response to the form of an ASAT test is a question a lot of people have pondered, but I believe that it was not uncalculated or an accident, and I see it a result of a hedging strategy that Beijing has had against the uncertainty of the diplomatic thrust that began in the 1990s.

With China's attempts to prevent space at the U.N. stymied, the ASAT test was a last ditch effort to bring space back from the brink and redress the perceived strategic imbalance in space.

It's not that this response does not represent a threat to the United States. It does certainly, but I think the threat is actually limited, and I think that is primarily based on the fact that the test was a response fundamentally.

I would like to just briefly touch on a few ideas about what, how I think that, where we go from here in terms of the new security environment in space. I see the Sino-U.S. relations in space essentially as a classic security dilemma dynamic where almost any action by one will lead to the insecurity perceived or real by the other.

This is an extremely complex issue, but primarily because of the dual-use nature of space and the blurred line between offensive and defensive technologies. So how can this cycle, the vicious circle be broken? I think technological solutions will always be limited, and perhaps within the non-offensive realm, things like situational awareness, improving situational awareness would probably fall within that to a large extent.

But without clear knowledge of intent, I think technologies will by and large continue to drive this security conundrum. And I think

that goes for most of the components of the multi-layered missile defense system, which in my opinion will invariably affect the perceptions in the Taiwan Straits.

There are a number of confidence-building measures and ideas that have been tabled, rules of the road and so on that I think are very important. But I would like to point out a couple that I think are pointed out less often, and the one is the U.S. position at the Conference on Disarmament, and I think that the argument that there is no race in space and therefore no need for a treaty is, I think it's becoming, rapidly becoming untenable.

And I think that the Chinese do not believe that it's true, and the test in a sense is probably, inadvertently or not, I think has shown that. The other suggestion that I would bring up to conclude is that we really, there's so much in terms of intentions that go beyond capabilities and where they're going in terms of intentions that we do not understand, and that includes the reasons for the ASAT test.

We need to talk at a strategic level and at all levels across the board in a systematic way consistently which we, I would argue, we're not doing right now. I think that that communication is the one thing I think that will really help drive, sort of break that cycle, the security dilemma.

All of the measures, I think, though, primarily are somewhat palliative in nature and I think that we should not ignore the underlying current of the strategic dilemma in space, and that is China has, I think, demonstrated that it finds the state of affairs in space unacceptable, and I'm not sure exactly how we get around that. But I think that that's sort of the new strategic environment and is something that we need to look at and really address.

So thank you very much for your time and I welcome comments and questions.

[The statement follows:]

**Prepared Statement of Mr. Eric D. Hagt, China Program  
World Security Institute, Washington, D.C.**

**New Frontier in Sino-U.S. Relations: Challenges in Space**

The United States must grapple with China's rapidly growing power and influence in the world on many different levels, but China's military modernization is the Gordian knot in this relationship. Despite close economic ties, the objectives of China's evolving military strength cause great angst about the direction China is taking and how the United States should respond. Space is very unique to this relationship because as an indispensable and dual-use technology, it is the nexus of deeply held economic and security interests on both sides. As such, it also holds very decisive opportunities for cooperation.

The United States must wake up to the fact that China views outer space as far more than just another asset to be pursued in competition with others. Satellites play an important role in China's ambitions for

globalization, commerce, finance and continued economic development. Manned space is an important driver for advanced science and technology and national prestige. And space, the moon and Mars are valued for their potential as resources. On the security front, China has long understood the centrality of space for military power in terms of service integration, force enhancement and force projection. China's worries over its nuclear deterrent and the status of Taiwan are also intimately connected to China's perception of its rights in space and the activities of others. These factors are key to both national sovereignty and national security and constitute the clear necessity to access space and protect its interests there.

Understanding how Beijing will act to exercise its perceived rights in space and address threats to those interests is central to America's future security in space and entails a discussion of several issues. First, what preparations has China made for conflict in space? This requires an examination of background information ranging from capabilities to organizational changes to principles guiding war in space. Second, why did China test the anti-satellite (ASAT) weapon, and why now? Analyzing the motivations behind this act will bring into focus China's larger intentions in space, and how this is to be balanced against its military preparations and thinking on space warfare. Third, what are the consequences of the test and China's larger ambitions for the United States, China's neighbors, and the international community? Perhaps more importantly, how can the United States respond in a way that does not imperil national security or that of the security of outer space?

### **Space Conflict Preparations**

The ASAT test has raised a lot of speculation (and suspicion) of China's objectives in space, especially with regard to its preparations for military conflict. In attempts to divine Chinese thinking in this realm, there is a tendency to rely heavily on a determination of its military space capabilities and then draw a speculative line to its intentions. This is, in part, a result of the paucity of reliable and accurate information on China's military space program, but regardless, it holds limited insight into where China is heading in space and why. China's intentions in space and the security implications for the United States are also a product of the current security architecture of space and China's changing strategic perception and interests in space.

**Capabilities:** An analysis of China's ASAT capabilities should be divided into two basic categories: what is known and what is speculated. We know China has the ability to use a medium range ballistic missile as a direct ascent, kinetic energy ASAT (also known as a kinetic kill vehicle, KKV). The extent of that program is not known, but mated with a larger booster, a KKV could reach satellites in higher orbits. With China's civilian and military space programs closely intertwined, much of this real and potential ASAT-enabling capability falls under existing dual-use technologies.

Everything else regarding Chinese ASAT capabilities falls into the second category, what is speculated, including a number of dual-use programs that are under research and development, but which have no known dedicated weapons programs. Several of these technologies could conceivably lie within China's technical capability including co-orbital interceptors, space mines, either conventional or nuclear. In addition, China has been researching and developing laser technology since the 1960s. Among those most relevant to ASAT capabilities are free-electron and chemical oxygen-iodine high energy lasers, which could provide the technology base that could dazzle or permanently blind optical sensors of space-based missile defense components, or at higher power could damage those satellites. High power microwave weapons for jamming have also been designed and tested. Other relevant R&D with dual-use potential includes China's small and mini-satellites, which would allow China to launch swiftly using small, mobile launchers and which would have the potential to disrupt, degrade or destroy space assets. While a number of required support capabilities for an effective ASAT program are improving in connection with China's manned and commercial space programs, tracking, surveillance, and launch-on-demand capabilities are probably still insufficient.

**Institutions:** An important measure of China's preparation for conflict in space is the state of its organizational and institutional make-up. This is a diverse subject, and could include aspects from staff management to logistics and R&D support (e.g., ASAT-related research falls under China Aerospace and Technology Corporation [CASC] and its subsidiaries, China Academy of Launch Vehicle Technology, the Shanghai Academy of Spaceflight Technology, and the China Academy of Space Technology, and numerous others). This is described in great detail elsewhere; however, two points are worth stressing in this respect.

First, there has been movement on the status of the organizational leadership relevant to military space that is indicative of internal thinking on the subject. In fact, to date, there is no separate military space command; however, this may be changing as evidenced by calls within several key military organizations to create a dedicated military space command with a stated purpose of tackling the growing strategic and national security threats in space. The driving force behind this new command system appears to be the PLA General Armament Department (GAD). Presently, command over civilian space experiment activities is roughly divided between the State Council, the Central Military Commission (CMC) and functional sections of the GAD. Although the institutional hierarchy of China's military space program is not fully understood, military space activities will be led by the CMC and the PLA General Chief Department, with significant personnel coming from the GAD. Under a new powerful supreme command department for space, an agency with the Chinese president as the supreme commander, military space would take on a new priority in terms of budgeting and military and political authority; similar to what occurred with the establishment of the Second Artillery, China's strategic force. The PLA Air Force appears to be challenging the calls for an independent space command arguing that a service integrated with the Air Force would better serve the nation's security interests. Reports in 2005 for a feasibility study on such a command have given additional credence to its impending creation. Despite the outcome of this debate, it demonstrates that attention to the relevant security issues in space are mounting.

Calls for a separate space command have additional significance for this discussion on China's preparations for conflict in space. With organizational and industry constituencies taking root in the system and vying for political and economic influence and authority, a degree of imperviousness to outside influence may grow in tandem. The closed and nontransparent nature of China's military establishment, which largely runs the space program, only exacerbates this tendency. The sum of these realities suggests that once set in motion, national defense considerations planned over a long period to address security threats may be responsive to a degree by external factors, but cannot be altered at the whim of those factors. These tendencies may impact the degree to which China's space program is malleable to fine tune its course of developing military capabilities.

The second point regarding institutional status is the history of China's priorities on spending in space. The vast majority of China's space related program, whether manned space, satellites or military assets, largely falls under GAD and its subsidiary institutions. The official budget for China's space program is approximately \$2.5 billion and employs up to 200,000 workers. With 90 percent of space technology being dual-use, it is difficult to ascertain the degree of focus and spending that goes directly or indirectly to military programs. This does not negate the fact that a decision was clearly made in the early 1990s under Project 921, whether by choice or by necessity, to orientate China's space efforts to a civilian program. Advancements in dual-use, ASAT-enabling technologies such as systems integration software, propulsion, orbital docking, systems diagnostics, miniaturization and navigation are real. But, while space technology may have dual-use applications, that is far less true for hardware development and testing. China's decision to primarily develop civilian space over military, its known ASAT capability notwithstanding, makes funding and institutional interests for a larger, dedicated military space program ambiguous at best.

**Guiding Principles:** Finally, the last element of China's preparations relevant to space warfare is the development of doctrine, generally defined to include strategic, tactical and operational levels. Open source literature contains little definitive information on official war fighting doctrine for space. A number of recent scholars and reports have made attempts to discern China's thinking in this realm either by inferring

doctrinal elements from other areas (land, air, sea) or by analyzing relevant but unofficial publications. However, their applicability to Chinese military thinking for space is debatable.

From what can be deciphered from open sources, China's guiding principles in space warfare for the foreseeable future can best be described as limited deterrence in space. The outline of this strategy has a number of salient characteristics. One is that it is defensive in nature and as such is circumscribed by China's overall defensive military strategy. The concept of 'comprehensive defensive actions' is often divided into 'passive defense' and 'active defense', with China's space force tasked with both passive and active strategies. However, the focus is on capabilities to enhance the survivability of China's satellite networks, and to ensure its access to space, that is considered indispensable for future 'informationalized warfare.' 'Passive defense' emphasizes a preventative quality stressing protection against attack and includes measures for satellite assets including hardening, encryption, camouflage, stealth, and redundancy and duplication in satellite network systems and subsystems. 'Active defense', a central component of this strategy, includes countermeasures such as interference and jamming techniques, and in extreme situations using micro-satellites to actively guard other satellites, act as decoys or even counter-attack. In the long term, missile defense will also be part of the overall space force.

A second characteristic of this limited deterrence in space is an emphasis to protect against an adversary's capability to prevent or restrict China from accessing space to its economic and national security advantage. The PLA believes that U.S. intentions in space are not only to exercise its right to protect its satellites and other space assets, but also to deprive other countries of the same. China sees in space known (e.g. orbital slots) and unknown (planetary) resources and assets to which it has sovereign rights to utilize and explore. The ability to guarantee its access to space in light of threats to that goal can perhaps best be summed up as the ability to *deny the denial*. The line between offensive and defensive doctrine in a straightforward strategy and capability of *denial* in space is surely a blurry one. Without taking the point too far, *denying* others a capability to *deny* is subtly, and arguably, distinctive in placing a premium on defensive posture. While offensive measures have been discussed by some Chinese authors, they are largely dismissed as being strategically destabilizing and not within China's reach for the foreseeable future.

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A wide reading of the open literature strongly suggests that China's preparations for space warfare remain ambiguous or simply indeterminate. This state of affairs is certainly due in part to a lack of transparency or strategic and political expediency. However, while that may be true for certain aspects of China's space warfare preparations, it is much harder to make that case across the board, from capabilities to organizational culture and doctrinal thinking, all of which are instrumental for the future of China's military space program. Thus, the alternative cannot be dismissed: that a degree of the ambiguity reflects reality and that many elements of China's preparations for conflict in space remain indefinite. That is not to be naïve about what China may be up to by overstating its ASAT and other weapons programs -- presuming worst-case scenarios is the greater risk because it can inadvertently spur on the Chinese military space program and lead to negative security consequences for American security in space.

### **ASAT Test: Strategic Response**

While capabilities, institutions and doctrine help provide the broad strokes of where China's program is currently, they have limited utility for the country's longer term objectives and its intentions in space. Important political, diplomatic and strategic factors critically influence its direction, and in China's case, may be determinative. On balance, while these issues add up to a strategic logic for China to build ASATs and other assets for conflict in space, there are powerful reasons for China to avert a military competition in space with the United States.

In this light, China's recent ASAT test is instructive. Why was it tested and what does that mean for space security and the United States? China's ASAT test should not be interpreted as a direct threat to U.S. space *power* but a challenge to its ambitions for space *control* and *dominance*. With little information emanating

from Beijing regarding the test, discounting the possibility of internal struggle, miscommunication or clumsy miscalculation within China as a partial explanation for the test is obviously difficult. However, based on China's past behavior, its interests in space and the huge stakes involved, it is also implausible that the test was executed without a careful consideration of the consequences. Rather, the balance of China's perceived threats, economic development goals, techno-national and international image interests related to space point to the test primarily as a strategic response to the United States.

In the past decade, China has derived a number of key conclusions from its observations of U.S. military activities in space that have fundamentally shaped China's own strategic posture. The first is the profound implications of space for information and high-tech wars. China witnessed with awe and alarm the power of the U.S. military using satellite communication, reconnaissance, geo-positioning and integration capabilities for an impressive show of force beginning first with the Gulf War in 1991, to the recent campaign in Afghanistan and Iraq. The U.S. military's almost complete dependence on space assets has not escaped the close examination of Chinese analysts. ASATs are seen by some analysts as weapons in line with China's asymmetric military strategy to hit enemies' vulnerable and hugely expensive assets in space with relatively cheap and easy countermeasures.

Coupled with a number of key U.S. policy and military documents that call for control in space and the development of space weapons, as well as the U.S. refusal to enter into any restrictive space arms control treaty, China has concluded that America is determined to dominate and control space. This perceived U.S. intent leads Beijing to assume the inevitable weaponization of space, which mainly centers on the current administration's goal of being able to shoot down missiles of all ranges, in all phases of their flight (boost, midcourse and terminal) and to do this from land, sea, air and space.

These capabilities are extremely worrisome for China as they directly impact China's core national interests and security. Components of this layered missile defense system (particularly boost-phase) will rely on space-based early warning systems, and the U.S. Missile Defense Agency plans to include space-based interceptors having both defensive and offensive capabilities that could effectively negate China's minimum nuclear deterrent arsenal. The 'Shriever' space war games conducted by the U.S. Air Force in 2001, 2003 and 2005 strongly reinforced the conclusion that U.S. space control sets China as a target. An accelerated development of the U.S. ballistic missile system, especially as it is being developed in close cooperation with Japan, has been cited as threatening China's homeland and nuclear deterrent and may deeply upset the region's strategic balance or lead to regional proliferation.

Most central to China's concerns, however, is the direct affect U.S. space dominance will have on China's ability to prevail in a conflict in the Taiwan Straits. Two scenarios are commonly cited as the most likely regarding space assets. One would involve China's own reliance on force enhancement capabilities and specifically reconnaissance and targeting (of U.S. aircraft carriers for instance) with anti-ship missiles. The second scenario would entail disabling U.S. satellites in preparation for a conflict in the straits and would involve identification, tracking and ASAT capabilities. In both situations, China is vastly the weaker power in space and hence more vulnerable.

Experts have noted the significant financial, political and technical barriers to most of the U.S. space weapons and even components of the multilayered missile defense programs. Yet, given the growing budgets for U.S. military space and missile defense activities, the current administration is set to continue pursuing these systems. Moreover, a significant portion of the U.S. military space program is classified, making a determination of the extent of U.S. military space program highly problematic. In fact, it can be reasonably argued that as a best case scenario, "the jury is still out" on whether the United States will ultimately pursue weapons in space. This is particularly problematic from a Chinese perspective that misreads these nuances in the United States and combines them with other U.S. actions and words in its conclusion regarding U.S. plans for space weaponization.

However, in addition to the above strategic factors in space, China's angst is compounded by its own

growing interests in space. China now stands at the cusp of becoming a heavily invested power in space. It has deep and growing interests in terms of the lucrative commercial satellite industry, its civilian, manned and exploratory space programs as well as military programs in space. China plans to launch up to 100 satellites during the Eleventh Five Year Plan (2006-2010), an almost four-fold increase from the number launched in the preceding five-year plan. Its manned and unmanned civilian exploratory programs are equally ambitious for the next 15 years with launches planned for manned docking in orbit, voyages to the moon and the beginning of a Mars program and a sun mission. Several new satellite and micro-satellite research and production facilities have significantly boosted China's indigenous satellite production program. Also, a brand new launch center is under construction in Hainan Province, which will vastly increase China's capacity to launch vehicles into geostationary orbit. China is cooperating with many countries on a broad range of projects. All told, China's ambitions in space are impressive and the growth of its programs unprecedented. Moreover, space is far more than a monetary investment for China. It's aspirations in space are also part of a larger and more comprehensive economic, social and scientific development plan. Presently, China remains less dependent and therefore less vulnerable in space than the United States, but that situation is changing. The ASAT test was a clear message that China also has deep and growing interests in space that require defending.

Thus, the confluence of China being at the threshold of becoming a space power along with China's strategic vulnerabilities as a result of U.S. military developments in space have thus engendered a fundamental response: America's pursuit of space control and dominance and its pursuit to develop space weapons pose an intolerable risk to China's national security and interests. China's own ASAT test embodied this message, redressing what it perceives as a critically imbalanced strategic environment that increasingly endangers China's evolving interests. Yet, China has an overwhelming interest to avoid the weaponization of space, and such a test may have been a desperate measure to pull the United States back from the brink. Failing that however, the ASAT test also demonstrated China's determination to defend its interests through deterrence. Its willingness to risk international opprobrium (and endangerment of its own space assets, let's not forget) through such a test, and instigate the very U.S. reaction it seeks to avoid, conveys the importance of space to national security and China's grim resolve to defend it.

The timing of the test may also indicate China's desire to avoid a costly arms race. China has repeatedly said it will not enter a space race with the United States, certainly not in terms of achieving strategic parity (which it cannot afford). The ASAT test could be a last ditch effort to gauge U.S. determination to pursue its goals for space control. If they prove unbending, China would demonstrate the resolve to deter these ambitions while the United States remains more invested and vulnerable in space and at the same time alter the degree and manner in which China itself invests in space (for instance, China would avoid building up expensive and vulnerable space assets).

China has been calling for arms control in space for a long time, culminating in the draft resolution on Preventing an Arms Race in Outer Space in 2002 at the Conference on Disarmament (CD). Yet, every call by China's diplomatic effort at the CD has been effectively blocked by the United States. The latter's rejection of a treaty to ban weapons in space, based on the rationale that it was not needed because there was no military space race, is widely rejected and is perceived as a U.S. preference to maintain its freedom to unilaterally act in space. With the ASAT test, the Chinese may have, inadvertently or not, put paid to the argument. While an open military competition in space may not yet exist, there is a clash of interests in space, along with an increase in threats, both perceived and real, between the United States and China.

Many have pointed out the contradiction between China's diplomatic offensive and its decision to conduct an ASAT test. However, the latter was more likely the product of a separate and perhaps independent hedging track rather than a deliberate intention to develop space weapons covertly. Although most aspects of China's military program in space are largely unknown, the open source literature indicates that it proceeded in several stages as a response to developments in the United States. This process largely began in late 1980s with a realization that the U.S. missile defense, ASAT and space weapons program could endanger China's national security interests. Yet, at that time, it seemed that China preferred to solve this

perceived threat through a diplomatic approach. With gridlock at the CD beginning in the mid-1990s, however, the military option – independent of a diplomatic one – took on greater urgency with the call for a development of relevant space technology. An awareness that effective defensive capabilities in space would take a long time to develop provided further impetus to these trends. The second phase was marked by the Shriever war game exercise in 2001, which vindicated China's long-held fear of being a primary target of the U.S. military space program and triggered China's determination to resolve this threat in space – either through military or diplomatic means. From China's perspective, all U.S. actions since that time have served to diminish a diplomatic solution while underscoring the necessity of a military hedge in space.

To sum up, the ASAT test and China's overall military preparations for conflict in space are closely linked to the perceived threats to its interests in space, both strategic and other, by the United States. But the balance of those interests strongly suggest that China's intentions include, if not necessitate, avoiding the weaponization and an arms race in space. The challenge, as defined by recent events, is to the current imbalance of the strategic architecture in space (U.S. dominance), not U.S. power in space *per se*.

### **Threats**

China's ASAT test implies a clear but limited threat to the United States (and its allies) that should be considered in close connection with a potential conflict in the Taiwan Straits. However, considering the sum of China's preparations for conflict in space as well as a careful consideration of its intentions as described above, the threat to international space security is arguably more benign than this spectacular test, and the orbital debris cloud it created, would suggest.

The destruction of the defunct FY-1C at 850 kilometers above the earth using a medium-range rocket puts at risk critical and vulnerable space-based components in low earth orbit (LEO) such as the space-based tracking satellites (e.g., SBIR Low) as well as the giant keyhole optical and Lacrosse radar reconnaissance satellites in LEO. As they are big and few in number, they are not immediately replaceable if lost. If mated with a larger booster, a similar kinetic kill vehicle might be able to reach satellites in higher orbits. However, U.S. satellites monitoring the globe for missile launches -- Defense Support Program spacecraft - - in geo-synchronous orbit at some 24,000 miles high, and GPS constellation in medium altitude at 12,000 miles are both too high to be of threat to this kind of ASAT. A number of other capabilities as described in the first section could provide a far greater threat range, but the development level of these capabilities in China's space program is largely indeterminate.

The degree to which China's ASAT test directly threatens Japan is roughly proportional to U.S.-Japanese cooperation in development of the missile defense system and how their alliance could play out in a Taiwan scenario. Systems including PAC-3, Aegis/SM-3 and THAAD and the overall interoperability with the United States might encourage Japanese involvement in a Taiwan conflict. In addition, the U.S. Navy and Air Force have bases in Japan, which may require the United States to seek support from the Japanese in a sustained conflict, including the conflict over Taiwan. Given the legacy of mistrust between China and Japan, this Chinese action may fuel Japan's development of its own military space capabilities, especially as it came in the midst of the North Korean nuclear crisis.

In India, the Air Force's recent 'China threat' lobbying and its push to establish a military space command may have been given a significant boost by the ASAT test. With India rising as an Asian power, China certainly has concerns over U.S. cooperation with India on missile defense, a development that could deeply alter the region's strategic balance. Certainly the ASAT test holds an inherent threat to any space faring nation and particularly a potential strategic competitor to China. However, Sino-Indian relations have recently made significant progress and without a closer connection to the Taiwan situation, the ASAT test should not be seen as an immediate threat to India.

In terms of greater threat to the international community, the main threat from this ASAT test is the debris it created, stretching from approximately 425 to 3,000 kilometers, endangering over 100 satellites owned

by a variety of nations and commercial companies, particularly Earth-observation and weather satellites. However, China has shown a vigorous desire to cooperate in space with any willing nation. China is jointly engaged in developing a number of satellite programs, with eight other countries under the Asia-Pacific Space Cooperation Organization treaty, as well as with Nigeria, Venezuela, Brazil, Russia and a number of countries in the European Union.

More importantly, does the test and China's ambitions in space pose a larger strategic threat to the United States? The nature of China's intention by ASAT testing is paramount to answering this question. As analyzed previously, the test was fundamentally a deterrent *response* to the United States and therefore represents a hedging strategy. If correct, this would suggest that the inevitability of China's pursuit of space weapons is connected to the inevitability of America's space domination goals. This does not diminish U.S. vulnerability to the ASAT test, but it does have implications for a longer term strategic threat and solutions to addressing it as outlined in the following section.

### **Cracking the Security Dilemma**

The paradigm the United States faces with regard to China in space, particularly in the aftermath of China's ASAT test, is one of a classic security dilemma commonly defined as two states that are drawn into conflict because the actions of one state to increase its security are interpreted as threatening to the other state, leading to a cycle of provocation. Space is highly susceptible to this zero-sum dynamic because of the blurring between defensive and offensive capabilities in space as well as the dual-use nature of space technology. China has demonstrated that it has interests in space and will no longer accept the status quo of U.S. plans for space dominance. While this may have had a deterrent and defensive intent, it is perceived as inherently threatening to U.S. assets in space. The security dilemma in Sino-U.S. relations is particularly troublesome as the two countries develop a complex relationship that is economically close, politically ambiguous and potentially adversarial militarily. How can the vicious circle of the security dilemma in space be broken? It will require a highly creative mix of measures to give China greater strategic room and access to outer space that will not at the same time appear as U.S. weakness (which may encourage China), or as giving up substantial strategic ground (which is politically infeasible).

Purely technological solutions to the security dilemma are limited. Passive protective measures such as hardening, encryption, camouflage, stealth, and redundancy of satellites would be relatively uncontroversial. The Chinese ASAT test has certainly underscored the vulnerability of U.S. assets in space and has spurred an already growing consensus around requirements for improving situational awareness. Passive protective measures would enhance the ability to see and understand what is going on in space through upgrading and expanding the Space Surveillance Network. Most of these measures would roughly fall into a non-offensive category as well, but even here, verification and inspection capabilities could be ambiguous in undercutting China's security.

Beyond passive defense technologies, most capabilities in space will drive the security conundrum if not accompanied by a clearer intent of purpose. This goes for many aspects of the currently envisioned multilayered ballistic missile defense system. The system is hardly offensive in concept, yet China considers many components of it as threatening. Upper tier, boost-phase and mid-course interceptors, and Aegis-based systems, could negate China's nuclear deterrent and protect against China's most potent coercive tool against Taiwan—short and medium range ballistic missiles.

In fact, China's worries over U.S. intentions in space are most closely connected to the strategic balance in the Taiwan straits. Taiwan is a core national interest to China, and is also virtually the only conceivable point of conflict between China and the United States for the foreseeable future. This greatly complicates any solutions as Taiwan is a particularly knotty challenge in its own right. But it also underscores the importance of a political solution over a technical one. Due to the security dilemma that defines Sino-U.S. relations in space, this is surely fiendishly difficult but it is not impossible. Recognizing the close linkage between strategic stability in the Taiwan Straits (foreign policy) and U.S. space weapons programs is

essential. This is rarely acknowledged in any systematic way, let alone factored into military decision-making.

China's evolving notions of sovereignty in space could increasingly become another point of tension in Sino-U.S. relations in space and one that China will likely seek to redress. China claims equal sovereign rights (under international law) to access space, which is impeded by U.S. national security objectives in space. At the same time, China is threatened by U.S. satellites -- particularly those with military utility -- passing over Chinese territory. Although outer space is viewed as the global commons, its exploitation, whether for commercial, military or other purposes, overwhelmingly favors the United States. This is in contrast to international waters, where U.S. fleets safeguard shipping lanes that serve a truly international trade. In space, the strategic advantage this bestows on the United States is not lost on China. It does not have the ability (or the motive) to challenge the United States on the high seas, but it is showing a growing willingness to exercise its rights in space.

Other smaller steps may be more politically feasible, however, and could also go a long way to managing the competitive Sino-U.S. relationship in space. Clearly defining threats and parameters for acceptable norms of behavior in space has not been accomplished in any significant way. A 'code of conduct' and 'rules of the road' for space, with measures such as mutual noninterference of satellites and space traffic management, and procedures for 'incidents' in space would help to build confidence for mutual security. A reconsideration of the U.S. position at the CD could go a long way to not only addressing core values and interests in space but the fundamental problem of the perception of an inevitability of space weaponization. The argument that there is no space race and therefore no need for further treaties beyond the Outer Space Treaty is increasingly untenable.

Naturally, it takes two to talk. Despite the fact that blame also lies on the Chinese side in terms of its hedging behavior and its allergic reaction to transparency, it is precisely because we know so little about China's intentions, whether regarding the ASAT test or its larger military ambitions in space, that the imperative to talk is all the more stark. Dialogue across a broad range of space issues, at many different levels and in a systematic way is obligatory, not an option. Space is rapidly becoming the node where crucial strategic, military and commercial ambitions intersect, of both nations, and so these discussions should become part of strategic talks. While high barriers to effective test bans or arms reductions in space will always be elusive, negotiations can also serve to open channels of communication for conflict management. China will likely maintain a secretive posture for some time to come but when carefully considered, China has more interest to avert a space race than join one. Moreover, the ASAT test and military space program are fundamentally a response to U.S. goals in space and China is therefore malleable to a strategic solution. That window will not stay open forever.

Effective communication on such issues must be predicated on a well-considered analysis of the nature of the threat and an understanding of the other side's interests. This entails a reading of a vast body of literature that is largely inaccessible to the majority of students of Sino-U.S. relations, on both sides of the ocean. The problem is magnified however in the United States where few specialists (let alone non-specialists) have the language skills to read the material first-hand, a fact that is further compounded by the fact that material's authoritativeness is extremely difficult to discern. This creates a 'gatekeeper phenomenon' where much analysis relies on selected translations, where conclusions about China's military space ambitions are difficult to contend. A language task force to provide wider and more uniform access (civilian and government) to these materials could drastically minimize this problem.

In conclusion, many of the above measures are palliative in nature, requiring high diplomacy, and may or may not come to fruition. To focus solely on them would be to miss the larger strategic undercurrent of the security dilemma in space. China did not challenge U.S. power in space; it was challenging the U.S. self-described right to dominate it. China will unlikely accept U.S objectives in space if pursued at the exclusion of China's own core national values and interests. A failure to heed this evolving reality will likely lead to more friction, and perhaps even further testing. The future course of action is not about pleasing or

appeasing Beijing: it is about reaching accommodation and common ground that is not only equitable but inevitable. The United States needs to come to grips with the reality that China will demand more ‘strategic room’ in space. While it is not the message Washington wants to hear, and may be difficult to achieve politically, it is increasingly the reality that the United States must confront.

#### Appendix

During the past decade or more, there has been a vast proliferation of literature directly and indirectly related to ASATs and military space issues in China. Not only has the information increased in volume, but has diversified in viewpoint, ranging from the hawkish and dovish at the fringes, and everything in between. Understanding this body of information in China requires discerning analysis.

First, who is writing? The authors and their institutional affiliation are essential to discriminating the publication’s relevance to military and policy/strategy decision-making regarding China’s military space program. There is no set formula for determining the authoritativeness of an article or book but an important indicator is the nature of the references used (popular science, newspapers and *digests* as opposed to academic publications or papers produced at high levels). Second, what is the writing about? Is it ‘lessons learned’ and descriptions of other countries’ capabilities (e.g., the United States or Russia), or proposals and depictions of China’s own program? The majority of publications fall into the former category but are often interpreted within the latter. Third, and most basic, is the fidelity of the translation. This task can be more art than science, but the mistranslation of a few key words can drastically alter the meaning and intent of an article. All of these are critical to reaching balanced and informed conclusions about China’s military space capabilities, doctrines and intentions.

The paper submitted to this commission on Jan. 19, 2007, “The Assessment of China’s Anti-Satellite and Space Warfare Programs, Policies and Doctrines” commits all of the critical errors described above. First, the study claims to represent the majority of openly available sources, but only quotes from approximately 30 articles and 3 books that are not representative of a far larger pool of sources (the World Security Institute’s China Program has a library of over 1,000 articles and 30 books on the subject dating back to the 1980s). Based on a wide reading of the literature, the references used in this report appear to exploit the most strident and extreme voices. The degree to which these particular sources are not representative of China’s military space efforts should have been recognized and acknowledged. This report does neither, and therefore misleads the reader. One important instance in this regard, is the use of the book by Col. Li Daguang called *Space War* (2001), upon which eight of the 30 central findings are based. At the time of writing, Li was an associate professor at China’s National Defense University. His resume states he specializes in international strategy, national defense strategy, defense science and technology development, and Sun Tzu’s theory and its application in business competition. His role in China’s doctrinal thinking on space warfare and influence in shaping China’s military space capability build-up is unknown, but he is certainly not a prominent and authoritative voice and his book draws on popular science and digests. As for the other two authors, Jia Junming and Yuan Zelu, their books were only their PhD theses in the years 2000 and 2004 respectively. Yet, the most authoritative references --for instance *Military Astronautics* (2005, 2<sup>nd</sup> ed.), a book by Maj. Gen. Chang Xianqi, former president of the PLA Armament Command and Technology Academy) -- are not used as sources in the report. Chang’s book represents the findings of a key task force on space forces and space war-fighting under the PLA’s 10<sup>th</sup> Five Year Plan. Its tone is far less strident than *Space War*. (A brief review of *Military Astronautics* can be found in *China Security Quarterly* at [www.wsichina.org](http://www.wsichina.org)).

Second, the vast majority of the sources utilized in the study submitted are highly technical articles dealing mainly with theoretical aspects of space war fighting and its capabilities. There is indeed a large body of research papers discussing specific technologies and weapons platforms of other countries, but few of them speak directly about China’s “space warfare programs, policies and doctrines” as stated in the title of the report. Certainly, technology development is suggestive of larger doctrinal issues, but the line between them is far from clear. This nuance is almost entirely absent, confusing theory and technology assessment with China’s policy intentions.

In addition, a number of the extensively translated articles in the report are actually studies of other countries' capabilities, notably the United States (and/or Russia). The report 'reads into' these studies a reflection of China's own program. One example is the errors made in the use of Liu Huanyu's article on "sea-based anti-satellite platforms" (pp. 24-29). Whole sections of the article are rearranged in such a way as to inappropriately fall under a heading of proposals for what "China needs" in terms of weapons platforms. For instance, all of Section 3 (pp. 26-28), dealing with "anti-satellite weapons" is clearly a descriptive analysis of U.S. (and Russian) capabilities, a kind of 'lessons learned' approach, yet it is relocated under this "proposals" section. Another example is found on Page 46 (ref. #39), where the translation of the headline for a section and its reference omit the word "foreign", distorting the fact that the article is clearly a study on the high power microwave weapons of foreign countries, not China's.

Translation errors, of commission and omission, frequently occur, many of which go beyond minor technical nitpicking. China has certainly spent a lot of effort to carefully study U.S. weapons systems, from those used in the Gulf War to the current conflicts in Iraq and Afghanistan, as evidenced by the large body of literature. But the leap from that to what China will do with its own program is debatable and one that should not be insinuated through mistranslation. On Page 43 (Section 6) of the report, for instance, a crucial sentence is absent within the translated section. The missing sentence specifically states that "China has not conducted research in this area." More critically, at the beginning of the report's executive summary (pg. 3), it states that "...Chinese Colonels Li, Jia and Yuan all advocated *covert* deployment of a sophisticated antisatellite weapon system to be used against United States in a surprise manner without warning." However, in *Space War*, penned by the first author mentioned (Li Daguang); the use of "covert deployment" is never used in this context. Rather, he proposed that "China needs to build a small but capable space warfare special experiment force...[and] considering certain restrictions of the international society, this force should be secretly built and kept under low profile." Interpretation of books' themes is one thing, but mistranslation of quotes is another. Particularly, when a Chinese author is advocating such a provocative program, it is imperative to accurately translate the Chinese authors' words.

In sum, the purpose of this critique is not to discredit this report or dismiss its findings based on technicalities. But flaws go deeper than mere cosmetics. Neither is this intended to downplay the realities of China's military space program. To be blind to the fact that China may be hedging its bets in space by engaging in ASAT and/or space weapons efforts would be naïve, or worse, dangerous. But the conclusions drawn about the exact nature of the threat, and the underlying motivation and intention, must be based on careful and objective analysis. Misinterpretation based on problematic analysis and translation could lead to a worsening of U.S. security in space through misjudgment and overreaction. The gravity of this subject dictates a careful, comprehensive and accurate study of China's military space program.

HEARING COCHAIR REINSCH: Thank you. Mr. Cheng.

**STATEMENT OF MR. DEAN CHENG, RESEARCH FELLOW,  
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ALEXANDRIA, VIRGINIA**

MR. CHENG: I'd also like to express my appreciation to the Commission for being invited to appear before you today to address the question of the PLA's objectives in space.

My remarks today will focus on three realities that the Chinese anti-satellite test of January 11 brought to the forefront. First, that China is a space power of the first tier. Second, China acts according to Chinese interests. Third, Chinese decision-making is very much

opaque and not well understood.

First, the Chinese are a space power. That is they are a nation that possesses the political will, the financial and human resources and the physical infrastructure to use space for their own ends and on their own terms.

More to the point, they are a first tier space power, arguably exceeding Europe and Japan. Not only does China have the ability to exploit space for its own purposes, but the January ASAT test also has demonstrated a Chinese capacity to deny other nations that same ability. This may be an early, limited capability, but it is also now actual rather than potential.

This makes the Chinese a very different proposition in the post-Cold War environment. By being a space power, China has an enhanced ability to monitor its environment and its surroundings and can do so relying on its own assets.

As important, by controlling its own space assets, China can provide access to such information and capabilities to other nations of Beijing's choosing.

This raises a second important aspect. It is essential to view the PRC on its own terms. That is, as an agent acting towards its own ends and not simply a reflection of other nations, particularly American actions or perceived non-actions. China undertook the ASAT test because it fit into the Chinese calculus of comprehensive national power and self-interest.

An effective American response needs to take that calculus into account. In this regard, it is important to examine the role of the People's Liberation Army. The PLA is a professional military and, as with any professional military, it is charged with fighting and winning the nation's wars.

To do so, rather than relying on mass, PLA doctrinal writings over the last decade suggest that future wars will focus on high technology, especially information technology. According to PLA writings, the focus now is on fighting and winning what they term local wars under informationalized conditions.

To accomplish this, Chinese analyses emphasize the need to undertake wartime information, collection, transmission, management and analysis, while hindering to the greatest extent possible an opponent's abilities to undertake those same activities.

This entails a struggle for what the Chinese term "information dominance," which leads in turn to an increased emphasis on space systems and space operations. Space is a key arena for each of the information-related functions I just mentioned.

To fully exploit the information technologies and improve sensor systems to make modern weapons that much more destructive, in the

Chinese view, it now requires the ability to control space.

Thus, many Chinese military writings emphasize that there are now five battlespaces in which the PLA must be able to operate in future wars: the traditional land, sea and air; the electromagnetic spectrum; and outer space. Some Chinese authors even refer to the concept as space information warfare because of the intimate relationship between space warfare and information warfare.

To this end, Chinese military writings often refer to space as a new strategic high ground. Chinese authors note that control of space is now crucial for military operations. Because so much of the information needed to fight future wars involves space systems and because the information passes through space systems, the ability therefore to successfully fight and win future local wars, under informationalized conditions, will require the establishment of information dominance which, in turn, will entail operations aimed at establishing dominance of space.

So as a professional military, it would therefore be derelict of the PLA not to be prepared to undertake operations in space. What we have seen, therefore, is not the actions, as some have suggested, of a "rogue" PLA, but of a military that is taking its role seriously. At the same time, it is essential to recognize that, as a party-military, this is a role that the Party, acting as China's national leadership, has assigned and approved.

The PRC ASAT test, then, was ultimately undertaken because it is consistent with what the Chinese leadership perceives their national interests to require. And formulating an adequate response will require, in turn, addressing those same interests on Chinese rather than through an American lens, which brings us to the third reality.

Despite all of our interactions, Chinese decision-making remains extremely opaque to us. It should be extremely disturbing to all of us here that after 30 years of Chinese reform and opening, thousands of students, business ventures, and tourists, how such a test was decided upon, the mechanisms and personalities involved, and the processes by which the decision was made, remain ill understood.

This is potentially of enormous consequences.

It affects day-to-day diplomacy. A key assumption has been that the PRC is interested in being, quote, "a stakeholder" in sustaining the international system. But who are these stakeholders?

It affects crisis management. In the event of another Chinese missile test, such as we saw in 1996, or the EP-3 crisis of April 2001, or even in the wake of a non-security crisis such as another tsunami, who should the U.S. seek to contact in order to manage the crisis?

Finally, it affects military planning. Perhaps most problematically and also most immediately, the opacity of Chinese

decision-making means that our own military and civilian leaders are now put on notice that in the event of a conflict with the PRC, space is likely to be a potential battleground.

While efforts at increasing the robustness of our own military space assets including greater redundancy, hardening, and incorporation of stealth technologies are all essential, I'd like to suggest that there also needs to be efforts aimed at improving our understanding of Chinese decision-making, which has implications for both wartime and peacetime.

Once again, I think very much the U.S.-China Commission for inviting me to speak with you today and look forward to questions.

HEARING COCHAIR REINSCH: Thanks to all three of you for cogent, very helpful presentations. Commissioner Wortzel. [The statement follows:]<sup>9</sup>

## **PANEL VI: Discussion, Questions and Answers**

HEARING COCHAIR WORTZEL: Gentlemen, thank you very much. Three outstanding pieces of testimony. Some PLA officers advocate the capability for China to ensure that foreign surveillance assets cannot observe China from space and more specifically cannot observe China's strategic nuclear forces from space.

You spoke about the dangers of potential miscalculation, and part of the goal of that ASAT test was to blind American observation or have the capability to blind American observation of China from space. I'd like each of you to comment on what potential escalatory dangers you see if China acts to deny the U.S. the capacity to conduct satellite surveillance of China from space and deny launch detection from space for the United States in the event of a crisis, in any order, the order you testified, and if you don't care to comment, it's up to you.

DR. PILLSBURY: I could say, Commissioner Wortzel, two things based on short-term issues and then long-term issues. Long-term issues are addressed in these three books that I examined by the PLA space experts, expert in the sense that they teach and write about military space, and I've seen those authorities in China.

All three of them say that China should take a three-phase approach to denial and deception of foreign satellites. I'm glad you say foreign, by the way, because Japan and India are also I think included in this implicitly.

First, they advocate that in a period roughly 2010 to 2020, China by then should have developed the means to either hard kill, that is

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<sup>9</sup> [Click here to read the prepared statement of Mr. Dean Cheng, Research Fellow, Center for Naval Analysis Corporation, Alexandria, Virginia](#)

permanently destroy, or soft kill, temporarily disrupt, any and all foreign satellites over Chinese territory.

Everybody knows this is just an aspiration. It's just something in the book, but actually when you think about it, if you have a lot to conceal, it's a pretty good idea. It's also hard to do. It means in terms of situational awareness, you have to know a lot about several foreign countries' satellites, where they are and what they do. This in many ways is the heart of the security dilemma, to borrow Eric Hagt's term, involving an arms race in space. It's very difficult to know what's called the military space architecture of your opponent.

People very casually say, the U.S. has 400 satellites or it has low and medium and so forth, geosynchronous, but actually one of our country's biggest secrets is which satellites do what and whether the satellites that we say do one thing might, in fact, do another? There are several books on this. The best one is called "Deep Black" and there is a great effort by journalists when they are told something is really, really secret, they just love to kind of pick at it and see what they can.

But I'm relatively confident that the heart of our space architecture is still a pretty big secret from foreign powers. I think there's some evidence the Russians got the furthest and whether they transferred that, those crown jewels, to the Chinese, which would only take a couple days, I don't know.

But as long as it's hard to do, I'm not so worried about the long-term plan because we have many instruments ourselves to make our satellites maneuverable, to make them smaller, to rely on networks that are harder to find, and to engage in deception frankly ourselves about which satellites do what.

So the long-term problem we have time to work on and if this Commission makes recommendations to the Congress about that, I personally would be very grateful. This is not something to be complacent about.

The short term is a scarier situation, where it's possible all three of your panelists agree that there are some Chinese misperceptions about space. In your last panel, I liked Mr. Lewis' point that the Chinese may overemphasize how a single asymmetric strike, and often you see this phrase in the books I looked at, can bring America to its knees. They love to use this phrase, "bring our opponent to his knees with a single strike."

This is dangerous thinking because (a) it's not true; and (b) it could prompt retaliation. If you read General Cartwright's testimony on Wednesday to our Strategic Subcommittee, you see him very explicitly laying out this is what we'd have to do. If one satellite is taken down at 6 a.m., we're not going to wait around till noon to see if 20 more are

going to be taken down, when our entire intelligence and frankly financial and communication structure rely on if those are the ones that are taken down.

So, sorry for the long answer, but you have a short-term/long-term problem and it certainly merits the Commission making recommendations to the Congress, it seems to me.

Thank you.

HEARING COCHAIR REINSCH: Let's have the other two comment, and then we'll come back in another round to follow up if necessary.

Mr. Hagt.

MR. HAGT: I don't necessarily want to take issue with my copanelist here on sources. But I think that the readings of how the Chinese are thinking about some of these issues is extremely difficult to decipher. I know the books that Dr. Pillsbury is talking about, and I also know that there are a large number of other books that talk about these things that have been brought up, and the questions that are covered in different ways and in different thinking. I would argue that indeed the vast majority of sort of the mainstream thinking on this is more, I would say more defensive in nature than offensive in terms of in particular how that plays out in space in terms of dual use and then that blurry distinction between defensive and offensive is a difficult one. I realize that.

But in my estimation, I think that a limited deterrence in space with an emphasis on passive protective measures to me is really what is the thrust for the foreseeable future in Chinese thinking, but to address the question of what Mr. Wortzel brought up, I would say that the Chinese are very sensitive to satellites, for instance, passing over Chinese territory, and as we see with the EP-3 incident, I think there is a growing feeling of sort of national sovereignty and how sort of these kind of issues, and satellites is included here, infringe on that, and I think that is sort of changing in China.

I would say that I think what we will see more challenges to these kinds of things and there is a report on the painting of a satellite over U.S. territory which has been disputed and we're not sure exactly what happened. But whether that's true or not, I think that we will see more challenges to that as China's sort of notions of national sovereignty and how that extends into space. I think we will see more challenges to U.S. sort of position of control and dominance in space.

So I'll leave it there.

HEARING COCHAIR REINSCH: Mr. Cheng.

MR. CHENG: I think that Dr. Wortzel's question goes to two dilemmas, highlights them. First, the PRC's insistence on simultaneously characterizing itself as simply the most advanced

developing nation, while at the same time representing a significant portion of the world's economy and having a substantially modernizing military.

Certainly, for the moment, one can at least try to square that circle, but the trend suggests that the Chinese are actually trying to take advantage of straddling the fence. Therefore, they presumably have the "right," quote-unquote, to hide their weaknesses from the strong, namely from us, while not necessarily according that same courtesy to others, such as United States.

The second dilemma is the question of what the Chinese themselves necessarily understand about the importance and capabilities of missile detection and nuclear detonation detection, at least based upon the open source material, which I would like to emphasize, is all my testimony's basis.

The Chinese have not deployed missile or nuclear detection warning satellites. Now, that means several things. One, they may not be aware of the capabilities associated; but, second, it means that the Chinese space program and the Chinese thinking about space is very different from not only that of the United States but also that of the Soviet Union whose space systems very much were a mirror of our own.

Whether or not that was intentional is a separate issue, but the point is that the Soviets could understand what you could obtain and why this might be important. Whether or not the Chinese have done so is a very different issue, and on the subject of the security dilemma; I would just like to point out that the assumption, a fundamental assumption, has always been that everybody understands all of the parts of the matrix and assigns similar values to them.

So what happens is that when you have two countries that have very different views, going, for example, to the psycho-cultural and psycho-historical aspects, perhaps what I value and what I assume you value, is very different from what, in fact, you do value.

Finally, this goes to one last point: The issues of concealment, camouflage and deception are integral to PLA thinking and I would suggest is probably integral at the national level to strategic thinking. So whether or not the Chinese are going to be particularly focusing on hiding their strategic nuclear assets, I suspect is as much a function of SOPs that it is natural for them to do. That is, it is standard operating procedure not to leave things out to be observed given their druthers and given a choice, and so long as no one has actually tried to negotiate anything along these lines, then that's what they're going to do.

HEARING COCHAIR REINSCH: Thank you. Commissioner Fiedler.

COMMISSIONER FIEDLER: I would like to address with Dr. Pillsbury, and you two if you care to address the question of opacity and miscalculation that we're all concerned about and proffer a notion and ask you to comment on it. It's increasingly clear to me that as a conscious matter of strategy, the Chinese are denying us transparency and that it is, in fact, part of their strategy to do that.

In other words, it keeps us thinking, keeps us wondering, keeps us confused, and keeps us actually even perhaps spending more money or wasting more money doing things that we shouldn't do. This is evidenced somewhat in the initial response in the ASAT test to this bizarre notion, which you seem to dismiss, and I think I immediately dismissed as a matter of common sense, that the Chinese leadership didn't know that the ASAT test was going to occur.

So I would like you to comment on that question and the relationship of that perception that they left with the world as a matter of consciousness or a matter of dysfunctional decision-making or what, and whether or not their lack of transparency is a conscious strategic decision?

DR. PILLSBURY: Commissioner Fiedler, I think you've successfully pointed to one of the fundamental fissures in the China watching community in the United States and in Japan and in India, which is the speculation over why China is not transparent? And this has led to a number of ad hominem attacks by China experts against each other. It's led to a great deal of heat, but very little light, and frankly I propose that this is an area for some fairly disciplined research because again on the issue of alternative scenarios, by common sense, with any country, don't make it China, make it some other country that's not being transparent, there's a range of possibilities.

Number one, they're shy and embarrassed at how backward they are. We get this view put forward a lot by the so-called "panda-hugger" community that is very sympathetic with China and frankly the Chinese say this themselves: the reason we can't be transparent with you Americans is because we would lose face. We are so backward, and you're so impressive, we just can't let you in that facility or whatever it might be.

At the other extreme, we have the view that they have something to hide, something really big and really important, and it would change our calculations or those of India and Japan if they knew what's being hidden, and so it's quite common sense to hide it because they don't want countermeasures taken against them.

Then there is the kind of in-between view that, well, some organizations in China are obviously very open--the tourism industry. So it can't be totally cultural, but there's kind of a cultural argument in

the interim that, well, in this mid-zone, well, Chinese tend to control information more carefully than the enlightened Westerners who come out of ancient Greece and Rome and the Renaissance and so forth.

So if you just push hard enough, they will reveal what they're not being transparent about, but there will just be this initial cultural resistance. So you have these three broad schools. And every now and then something happens that surprises everybody--the appearance of a new submarine class a couple of years ago on the Internet that a number of U.S. government intelligence analysts told the press they were surprised about.

If they were surprised and it was hidden in a big basically hangar or building, it means that something was being hidden. How significant is a new class of submarines? Well, that depends a lot on your overall context of analysis. But I don't see any effort underway by the China-watching community to address this issue of what--your exact question--could the lack of transparency, which is a euphemism, by the way, it's really the maintaining at very high cost of secrecy to what China is doing.

What is the strategy, if any, behind this? It's not been addressed in my view so I would try to reveal a little bit of inside dirty laundry of the China field, but there needs to be an examination of is there a strategy here? If so, what are they trying to conceal and what is in our greatest interest to learn?

COMMISSIONER FIEDLER: Dean.

MR. CHENG: I think several aspects come to mind? The first is whether or not it is a conscious matter of strategy. I would suggest perhaps that in the middle road that Mike Pillsbury just laid out, that perhaps it is an unconscious matter of strategy, which is to say that it is something that you do naturally.

That doesn't necessarily make me feel any better that you are doing this, naturally. But this also goes to the issue of who the target is. That is, that as a matter of strategy, recognizing that China's internal political system remains in many ways, almost always actually, authoritarian even as they tried to bring in more political players into the system, that concealment, that hiding your strength is at times, not necessarily on specific things like submarines necessarily, but also failure to discuss SARS, failure to discuss Avian flu domestically, failure to discuss thoroughly what your own strategies are, may be as much aimed at the domestic political component, power struggles and the like, as it is in a broad concealment aimed at the U.S., Japan and India.

I'm not trying to say that the second is not important. Just that it may or may not be a particular factor in any given item of concealment and deception.

The other aspect was whether or not the Chinese leadership was aware of the ASAT test, and I would suggest, at least my own working hypothesis, has been that the Chinese leadership was fully aware of the ASAT program and had signed off probably on many aspects including testing, but not necessarily on specific dates, and so therefore understanding how their bureaucracy works becomes a very important factor.

I'm not sure that we understand how their weapons development process proceeds, what their concepts of milestones are, and therefore where things occur when, and whether or not, therefore, having approved an overall program to develop ASATs, whether Hu Jintao himself is then kept apprised of each and every programmatic milestone including the test. Which isn't to say that they're not aware, but only how far down does the top leadership become involved in those sorts of issues.

HEARING COCHAIR REINSCH: Mr. Hagt, do you have anything or should we move on?

MR. HAGT: Just briefly, I would say that looking at this at a little more sort of a bird's-eye view, I think the space program in China is by and large a military program, so it is non-transparent by nature. I think that is changing to a degree as China realizes that its own program is changing and the perception of others.

I think fundamentally that China sees itself as a much weaker power in space, and that sort of strategic balance I think that China focuses much more on in terms of transparency, in terms of intent, so the Taiwan scenario, nuclear deterrence and these sort of early warning, all these things, what is U.S. intent? And before it understands that, will it sort of divulge specific capabilities which we would attribute to real transparency? So I think there's a significant difference in how we talk about transparency.

HEARING COCHAIR REINSCH: Thank you. Commissioner Wessel.

COMMISSIONER WESSEL: Thank you all for being here, and it's been a great interaction so far. I'd like to go back, Dr. Pillsbury, to your initial comments and education here on a matter which I think is actually well-known: the Net Assessment process, Andy Marshall and all that has gone on for so many years.

It is not a secret, and is well known by I'm sure the Chinese as well. So the question of worst-case scenario and insurance programs against those worst-case scenarios, how do you view Chinese responses to that, to all the panelists? Meaning that if they know we have a net assessment process, which is going to provide one scenario of worst-case, and that we're going to prepare for that, whatever that means with some kind of insurance program, how does that factor into their

thinking knowing that we're going to be doing that?

Dr. Pillsbury, and the other panelists?

DR. PILLSBURY: I'm not sure I understand your question. They have their own net assessment process and office, and they have sought out Andy Marshall and the Office of Net Assessment for many years in an effort to exchange views, shall we say.

COMMISSIONER WESSEL: But I guess the opacity of their system is somewhat irrelevant if we are going to assume the worst, meaning that we know what capabilities are out there generally because we're preparing many of them. So I assume as part of the net assessment process, that they could have those capabilities, and we'll prepare to respond to that.

So the opacity, it seems to me, while relevant in terms of how many resources you expend, we're going to assume the worst and prepare for it. Do we know anything about how the Chinese view our net assessment process?

DR. PILLSBURY: This Commission has some excellent questions that probe and test the witnesses, I must say.

You're not an easy commission. Net assessment does not focus only on the worst scenarios. It never does that. I mentioned the term family or range of scenarios. Actually, one of the most important parts of net assessment is to understand the weaknesses and vulnerabilities of an opponent. This puts net assessment at odds with the intelligence community which famously once was asked many decades ago by a Secretary of Defense, I want a list of all the Soviet military weaknesses.

The intelligence community came back and said, sir, there are none, and if there are some short-term ones, they'll fix them soon.

So net assessment often is looking at the opponent's vulnerabilities and weaknesses, how they can be exploited or increased, especially over the long-term competition of 20 or 30 years, as measured against our strengths or areas we can strengthen. This is the essence of Chinese ancient statecraft as well frankly. It's not something invented by the Pentagon.

The Chinese process of assessment of us is quite a fascinating topic. They have debates about the nature and goals of the United States. We have some insight into their debates. They have American experts. They have experts on the American military. They have some who come out and want to meet Commissioner Wortzel because he used to be Army Attaché, Assistant Army Attaché, and they read his books. They want to know how influential he is on the American President and the White House. There are others who don't come out. There are other Chinese strategic thinkers and planners and assessors who we are told when we ask to them by name, this person does not see foreigners.

Ever. So our insights shouldn't be exaggerated, but I don't think the Chinese use worst-case scenarios either.

I think their focus is on shaping their potential security partner and that shaping that goes on into the first phase of the battle as well. They also have a concept of teaching lessons to head off a larger war. They actually thought, we now know, and Tom Christensen's book on this is quite good, we now know that their idea of sending 300,000 troops into northern Korea to attack us was to head off something bigger; they were going to teach us a lesson.

They did this with India in '62. They explicitly wanted to teach India a lesson by killing quite a few Indians and then capturing more, and then withdrawing back to the line before they had previously controlled. This is quite astonishing in the history of military conflict, that you attack somebody to teach a lesson and then you withdraw behind the line that you had before.

They did this again with Vietnam in 1979. They went quite deep into Vietnam, almost 300,000 troops, to teach a lesson, then withdrew, and continued to have skirmishes for the next 20 years on the border. Now, this is not the American way. To go back to Dean Cheng's, do they think differently about space? It's hard to find examples in American history--there are some--where we've sought to teach a lesson with one-third of our troops.

So it suggests that the Chinese use of force and the way they see scenarios and how they assess things may be quite different than what the U.S. and the Europeans do. I obviously don't have time to answer you a long list of things, but it's a major topic frankly because if the Chinese assess things differently than we do, we really should try to understand that.

HEARING COCHAIR REINSCH: Thank you. Commissioner Shea.

COMMISSIONER SHEA: Thank you very much. This has been an absolutely fascinating interaction. I've enjoyed it a lot. Back to this issue that Commissioner Fiedler raised about whether the political leadership in the PRC was in the loop with respect to the ASAT test in January, and as I understand your testimony, Mr. Cheng, you are surmising that this sort of middle ground approach, the political leadership approved the overall program, maybe the key milestones in the program, but at an operational level didn't sign off on key operational milestones. Is that fair to say?

MR. CHENG: Yes, sir.

COMMISSIONER SHEA: Okay. There are two other potential scenarios here, that the political leadership was completely out of the loop and that the military was acting independently; and a third scenario would be that the political leadership was signing off every

step of the way and knew fully what was going to happen and when it was going to happen, and maybe had been briefed on international political fallout or concerns.

Could you just give me under each of those three scenarios what inferences, conclusions, and implications for our own national security we can draw? Take each of the three scenarios and say does one scenario particularly concern you more, assuming that we really don't-- is it fair to say that we really don't know how the decision-making occurred in this instance?

MR. CHENG: Let me try to address that.

COMMISSIONER SHEA: Okay.

MR. CHENG: To begin with your third scenario, which is that the political leadership was fully and integrally involved, is certainly a possibility which would then suggest that the foreign ministry either is comprised of superb actors which is the role of diplomats the world over, or alternatively was, at least that element was, kept out of that loop.

This goes back again to the issue of decision-making and does, in fact, the foreign ministry sit in on a decision such as this, and that is a question which I think, at least based upon our understanding, for example, the Politburo Standing Committee, the Foreign Minister does not sit on that.

So it is certainly possible that the key leadership was involved, but that therefore the foreign minister is not necessarily part of that.

The implications for that would suggest that perhaps we are not always talking to the right people when we are trying to influence China's thinking. Now, to your first, to your second scenario where the PLA acted on its own, that really, that may or may not be different from the surmise that I had laid out, which is to say that the individual programmatic action may well have been undertaken by the PLA at a lower level to test an ASAT on January 11, 2007. That is not necessarily contradictory with the idea that the broader leadership is fully aware that this program exists, that testing will occur.

If on the other hand, where I think you're heading, which is that the PLA simply acted on its own, without reference to--

COMMISSIONER SHEA: I'm just trying to figure out what your assessment of the situation is.

MR. CHENG: I would say if that were true, then we would be potentially facing a very, very different calculus of who decision-makers are, of how the PRC reaches decision-making. I am personally; however, I have to say skeptical of that, in no small part because it implies that Hu Jintao as head of the Central Military Commission actually is basically kept out of a significant set of loops. It suggests that the PLA has access to power which is not reflected in its minimal

position on both the Politburo Standing Committee and the Central Committee of the Party.

It would suggest that it has the ability to undertake key decisions outside of its own purview on a range of issues which then begs other questions, things like the absence of national defense mobilization laws when they have repeatedly argued--the PLA has argued that it needs them and the rest of the government basically says, "Umm, that's nice, come back next year. Maybe we'll put it on the agenda."

The reason I surmise the way I did is in part because of, however, the Foreign Ministry's bad handling. What fits the pattern of behavior? How could the PRC have tested an ASAT and left its Foreign Ministry fumbling for an answer, and that's why I laid out the surmise and I do emphasize that it is an assumption, but I am certainly open to being corrected.

HEARING COCHAIR REINSCH: Thank you. Commissioner Bartholomew.

MR. HAGT: May I add something? I was just going to add something to that that I've been studying myself, and that is how the test may have represented--I think I have it in my statement--a hedging strategy for the government. If you go back over the literature, the documents of China's thinking about the U.S. space program, starting from SDI through the '90s, to sort of the real beginning of using space in warfare, the Gulf War, and then I think another phase being with the Schriever Wargaming in 2001, I believe was the first one, and then Rumsfeld Commission on Space, and so on, you can see a pattern of Chinese thinking about these things, and my own take on it, and again this is speculation, but I see that as a two-tracked response: a military one and a diplomatic one with the military one as a hedge against the diplomatic one.

I think that China has at some point, whether that was last year right before the test, or the last couple of years, I'm not sure, but that China has come to the decision that weaponization of space is inevitable and that China needs in a measure really to try and bring the weaponization of space back from the brink, that it decided to take this hedge to its conclusion.

How that was played out in the military in the leadership is very difficult, of course, to know.

HEARING COCHAIR REINSCH: Thank you.

DR. PILLSBURY: There's a fourth scenario I think you might want to add to your first three.

COMMISSIONER SHEA: Okay.

DR. PILLSBURY: I can't resolve it for you, but the fourth scenario has been put forward in a number of articles, Michael Swaine being the longest version, that he blames America because the first

tests the Chinese did were not made public, were not leaked by the United States, so there is some reason to believe the Chinese thought they could go ahead with the third test without any problem.

Another version of that same fourth scenario is that the Chinese did not intend for this test to become public. You may recall it was the United States National Security Council spokesman, which is pretty high up in our government, who made it public about the same time within hours of four governments going into Beijing asking for explanations.

So this scenario implies that the U.S. deliberately made this public and combined it with diplomatic demarches by three other countries who somehow seemed to have learned about this January 11 event also in advance of it being made public, and you see some of this in the Chinese press now, a sense of being entrapped by a very crafty hegemon who wanted this to spin out this very way to embarrass China and make it sound like there's a Chinese threat when we're all supposed to know that there is no Chinese threat, and anyone who says there is, is a fabricator.

HEARING COCHAIR REINSCH: Commissioner Bartholomew.

COMMISSIONER SHEA: Thank you.

CHAIRMAN BARTHOLOMEW: Thank you. Although I have questions, I feel like I have to make a comment. Dr. Pillsbury, is it not also possible that the U.S. and other countries had to go public with this one because the test had been successful, and they're going to be dealing with falling debris for a long time, and perhaps it made more sense to actually put it out there. There was just a story the other day about a Chilean airplane that was missed, just missed by a piece of falling debris. I have no idea where that debris came from, but you could envision what would have happened if the United States government had known that this had happened and some plane gets hit and a bunch of passengers die, and it looks like there is a cover-up.

Among the scenarios, there are all sorts of different alternatives. That was not what I intended to ask about. Commissioner Wortzel and I have been haggling up here about who's going to follow up on the national sovereignty issue. I'm going to leave it to him, but say that it is interesting.

I want to thank all of you. I also want to commend you because I know that there are some rather different viewpoints that are being represented here and there can be very testy and heated differences. I think that you all are handling those differences quite graciously and we really appreciate that.

I'm struck in some ways by the approach even on the weapons test and what it means reflecting a bigger underlying debate in U.S.-China policy or in the view towards policy. Mr. Cheng, I appreciate

the fact that you've said, look, the Chinese are going to use the Chinese objectives, and we need to understand what the Chinese objectives are. Mr. Hagt, more of what I hear from you is that, we need to be careful because if we treat them like an enemy, they're going to become an enemy. I don't know how we reconcile that, but I think that's one of the big fault lines in China analysis, that we all have got to either acknowledge or figure out how we come to some sort of unified analysis or maybe unified analysis isn't necessary, but we recognize it.

On the other hand, Mr. Hagt, I found myself a little confused between what your written statement said and your verbal statement.

Do you think that the U.S. should be concerned about China's intentions and capabilities in space?

MR. HAGT: Yes, definitely. I don't think there is any question that the ASAT test puts at risk U.S. assets in space and its ambitions in space in a greater sense. But I think I'm saying that, it's a limited, in my assessment, it's a limited threat because it was primarily, I think, a response to what China sees as sort of a rejection of the U.S. plans to dominate space because that infringes on China's core national interests and its national sovereignty.

So in the sense that it's a response, I think there is a window of opportunity to say, okay, then there is the possibility for the connection there. If it was just China doing this deliberately and covertly, with collusion with the Foreign Ministry, if that was the case, then I would say the weaponization of space is inevitable from both sides of the Pacific. But because I believe that fundamentally it was a response, then there is the U.S. response in turn, I think, allows for an opportunity to come to terms with the strategic issues in space.

CHAIRMAN BARTHOLOMEW: I don't know if you've had an opportunity to listen to any of our other witnesses yesterday or today, but when you take a look at analyses of Chinese interests in cyber warfare, for example, we understand the importance of communications for U.S. war conducting capacity. It is very difficult for me to see the ASAT test as a thing that stands on its own.

If you look at it as just something that stands on its own, I understand how you get to that analysis, but to me if you look at it as a bigger part of a strategy of what they are doing, trying to figure out how to counter us, neutralize us, it leads to a different conclusion. Again, I'm not saying that that's necessarily what's going to happen. I always get to the worst case scenario planning. If we have learned anything from this Iraq debacle, it is that we need to think through worst-case scenarios. But I don't think that the ASAT test can be seen in isolation. I think it has to be analyzed as a part of a bigger strategy of what's going on.

So it's not so much a question to you or, if I need to turn it into a question, it would be how do you view the ASAT test in the context of these bigger questions about Chinese warfare capabilities and intentions frankly?

MR. HAGT: I would agree; I don't think it's isolated. But I think that how China calibrated its response to this--I'm talking about greater security issues here. I think that because the U.S. is so vulnerable in space, it is the one area that China would have the opportunity to assert its strategic interests, its national sovereignty interests.

Can it do that in information warfare without a conflict? Can it do that on the high seas without running into the Pacific fleet? There is a much greater possibility for real conflict, I think, and here you have an ASAT test which hasn't been really admitted as an ASAT test by China yet. It was a test of its capabilities to hit a dying weather satellite for scientific purposes.

Also, and I'm not necessarily espousing that. I'm just saying that I think if you look at how the ASAT test was done, when it was done, and the fact that it was actually a medium-range rocket to hit one of China's own weather satellites, I think that was within what the United States itself has already done in terms of capabilities and in terms of the political consequences.

If it had tested a high-powered laser weapon to irreversibly damage a U.S. or its own satellite, destroyed the satellite, that would have shown that it was a demonstration of a capability beyond what the United States has already tested. I think you get into this--the demonstration of that may spur on U.S.'s own program to a greater degree than it did with this because it's within the confines of what the United States has already done and so on and so forth.

And it's in space. It's a place where the United States is vulnerable and I think that China can assert those.

HEARING COCHAIR REINSCH: Thank you. Dr. Pillsbury has already commented on this in his written testimony so I'll ask the other two of you to comment if you will on the proposal by the Chinese or by others for a multilateral treaty prohibiting weaponization of outer space, or variations thereof.

In light of all that you've testified to about Chinese advances in this area, is this kind of negotiation something that you think might be in our interest or do you think it would be a mistake at this point? Mr. Cheng first and then Mr. Hagt.

MR. CHENG: One of my favorite movies is "1776." There's a great line in there that there's nothing that's so dangerous that it can't be talked about.

CHAIRMAN BARTHOLOMEW: Apparently there are some

things.

MR. CHENG: But that being said, talk is one thing; committing the full faith and credit of the United States to something, now that's a different proposition. I would have no problem banning all sorts of things so long as we could define, for example, what a space weapon is.

One of the recent technologies, according to my understanding, is the development of a robot satellite capable of refueling, servicing satellites, because the Shuttle, of course, is seeing the end of its life span. So what we are talking about is something that will go into space, rendezvous, provide additional fuel, and then come home.

Far be it from me to ever have skepticism about our wondrous technology, but if one of those things ever went off course or if somebody else--we heard from the earlier panel about technology spreading and things like that. If somebody else developed that technology, and it went off course, was that a test of an ASAT when it slammed into something, or was that an accident? How would we know? I'm sure that somebody out there could give us an opinion, but you see here on an ASAT test or perhaps an attack against a weather satellite of one's own nation what that means.

I hesitate, therefore, to commit the full faith and credit of the United States to a treaty like that. I'd also point out the following: Chinese writings, military writings--and let me emphasize that we're talking about PLA writings about space--emphasize the importance of space operations, not in response to our being for or against space arms control, but because this is how we fight our wars, not in terms of ASATs, but simply the passage of information through space systems.

So an arms control treaty that essentially locked down all space weaponization, whatever that means, jamming, earth-based jamming, was the ASAT test a violation of weaponizing space since it was fired from earth? But, leaving that aside, a space arms control treaty would mean that the Chinese would be signing on to a treaty that permanently casts themselves in an inferior position in terms of fighting wars over potentially say an island 100 miles off of their coast.

Now, somehow, be it a cultural issue, be it a political issue, I don't think the Chinese bargain that way, but I may well be mistaken. So I defer to my betters on that.

HEARING COCHAIR REINSCH: Mr. Hagt.

MR. HAGT: I think the U.S. position at the Conference on Disarmament has essentially rejected any kind of treaty, whether it's banning the testing of ASATs or space weaponization in general. I think that this is in agreement with Dean--that it's very difficult to come to an agreement on verification of these treaties. But talking, of course, doesn't necessarily mean that it has to commit and I think that

changing its fundamental position that there is not a space race is, to me, in terms of perception--it's not reality--is very detrimental both, obviously to other countries, but also to the United States itself.

It seems to me very reasonable that we would at least talk about the possibilities, and I think the possibilities are some kind of ban on a destructive debris-creating weapons ASAT test at a minimum, and there is even debate on that because the United States may actually be very much in favor of this kind of destructive ASAT test. What about non-destructive ASAT tests?

The United States would have a great advantage to have a ban on the former and not on the latter because U.S. technology is so much more advanced in terms of co-orbital ASAT technology that, as Dean mentioned it, you have these guard satellites that could basically--robot satellites that will sneak up on another satellite and make the determination whether it's good or bad. So I think that this is a very complicated subject, but to me a basic test ban of destructive satellites and a "rules of the road," which I think is again coming to terms with definitions of space weapons, but also how do we deal with non-interference of each other's satellites. We define our space and our territory in space. These are all very important basic measures.

HEARING COCHAIR REINSCH: One of my favorite movies is Risky Business. But I don't think I'm going to extend the metaphor.

DR. PILLSBURY: Tom Cruise's first hit.

HEARING COCHAIR REINSCH: We have five minutes left and Commissioner Wortzel and Commissioner Fiedler each have one additional question to which you will respond briefly.

Commissioner Wortzel.

COMMISSIONER FIEDLER: I yield my time to the cochair.

HEARING COCHAIR WORTZEL: Mr. Hagt, I have one question for you and that is: in your testimony, a few times you have referred to sovereignty in space and territory in space. Now, my understanding of American views of international law such as it exists or common practice and Western views is that above 100,000 meters, there is no sovereign territory, analogous to the high seas.

So what is your understanding of Chinese legal views of the concept of sovereignty in space? And you other two gentlemen enumerate, if you could, the escalatory dangers of the blinding of American surveillance in space?

MR. HAGT: The United States has become pretty much the protector of the high seas. That's without question, but I think the difference with space is what purpose that serves and in the high seas it serves the purpose of truly international trading regime and it benefits everyone, the Chinese just as much as the U.S. Maybe in the

future even more.

But in space, there is much more of an imbalance there, and who benefits strategically and commercially, and that's much more in favor of the United States than it is of China. And so I think that's by virtue of the dual-use aspect of space technology. So I think it's a very difficult dilemma here and I think that because of all these factors, I think that China sees that it needs to be in space in order to exercise its sovereignty.

It doesn't need to be in the high seas, I would argue, at least for the foreseeable future. So that would be my thoughts.

CHAIRMAN BARTHOLOMEW: May I ask for a clarification, because my understanding of what you were saying, Mr. Hagt, is the Chinese are concerned about national sovereignty essentially over their space which raises all sorts of questions. It's a huge land mass that we're talking about, and if they decide that they control all of the space above China, that has huge consequences for everybody else in the world.

MR. HAGT: Yes, I don't know if national sovereignty is an extension from its territory up to 24,000 miles in the air. I think it's more national sovereignty is, yes, space is global commons and as such it has the rights to participate equally in those. But it also I think touches on strategic issues, and because the United States is able to pass over China with spy satellites, that infringes on its territory, and so there is sort of a direct sovereignty territory and space issue. There is also a greater national sovereignty issue.

CHAIRMAN BARTHOLOMEW: So you're talking about national sovereignty in both senses, which is the Chinese government's right to participate everywhere in space as well as their concerns about what they might think of as their own space?

MR. HAGT: Yes, and I think that's not necessarily clear, but I think it's evolving because before it was not clear, I don't think. It wasn't clear to anyone, but because the United States really dominated space, but now they're starting to think about these issues much more just like they're starting to think about their rights on the high seas and power projection and so on and so forth. So I think these concepts are developing.

CHAIRMAN BARTHOLOMEW: Larry, do you still want answers from the other panelists or have them for the record?

HEARING COCHAIR WORTZEL: You can submit them for the record.

HEARING COCHAIR REINSCH: Thank you very much. We appreciate the interaction. And thank you for your testimony.

HEARING COCHAIR WORTZEL: Great panel and great testimony.

HEARING COCHAIR REINSCH: The hearing is adjourned.  
[Whereupon, at 11:30 a.m., the hearing was adjourned.]

Statement on "China's Military Strategy for Space"  
*China's Military Modernization and its Impact on the United States and the Asia-Pacific*

Mary C. FitzGerald  
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30 March 2007

When China blinded a U.S. satellite in late 2006, the deputy head of Russia's Federal Space Agency was forced to feign nonchalance at the PLA's space-bound juggernaut. "We don't think China will outpace us in space research," Yuriy Nosenko declared. "We'll most probably move along in step with each other, as partners. And China will compete with us in space exploration."

Then -- caught like a deer in the PLA's ASAT headlights -- other world powers scrambled to voice surprise at China's January 2007 kinetic kill of an aging weather satellite. But by 2002, the PLA had already warned that "The prelude of the race to win 21<sup>st</sup>-century space dominance has begun."

### **The PLA Challenge**

For more than a decade, Chinese military strategists and aerospace scientists have been quietly designing a blueprint for achieving space dominance. As a result, equipping the "Space Theater of Global War" will dictate the military-technical priorities of China's defense industry for the first quarter of the 21<sup>st</sup> century.

From 1997-1999, a fundamental restructuring of the Chinese defense industry shifted control of defense enterprises from the military to the civilian government, and integrated their operations with commercial advanced technology enterprises. This has resulted in an accelerated rate of military system modernization -- especially for defense electronics -- and portends China's emergence as an advanced technology "superstate." Against this backdrop, the prospects for the PLA's swift emergence as a challenger in space are said to be "bright."

According to Chinese military scientists, the PLA revamped its RDT&E program in the late 1990s. The Chinese decided to cancel weapons projects that had been active for 10 years or longer and to direct these funds to developing so-called "new-concept weapons": laser, beam, electromagnetic, microwave, infrasonic, climatic, genetic, biotechnological, and nanotechnological. The results demonstrate that -- besides solving the problem of modernizing its conventional forces -- China now has three military priorities: space, nuclear weapons, and "new-concept" weapons.

Chinese aerospace scientists argue that "as we produce one generation, research and develop one generation, and pre-search one generation, we must move on to explore one generation." Indeed the "leaps-and-bounds" theory has become the linchpin of Chinese military development for 21<sup>st</sup>-century warfare.

China aims to achieve at least two objectives in its advancement of military space capabilities and military-technological development:

- First, to develop strong-propulsion carrier rockets to carry digital reconnaissance satellites in a bid to form a "round-the-clock" spatial image reconnaissance system; and
- Second, to develop a new generation of solid-fuel rockets to carry micro-satellites in an endeavor to establish a space network for precise positioning, communications, and electromagnetic jamming and reconnaissance. These rockets use 120-ton liquid oxygen engines and 50-ton liquid

oxygen/liquid hydrogen engines, and their carrying capacity can reach 15 tons. They are also capable of launching satellites into near-earth orbit.

### **Space Technologies**

“The weaponization of space,” say the Chinese, “is an inevitable developmental trend.” And the “commanding height” of strategic competition in the 21<sup>st</sup> century “will not be on Earth, but in space.”

According to the Chinese, the United States and Russia are engaged in a race to develop ground-, air-, and space-based weapons for achieving space dominance. These are said to include ground-based kinetic and airborne ASAT systems, high-altitude anti-missile weapons, space weapons platforms, aerospace aircraft, and space combat aircraft designed to execute simultaneous space and ground strikes.

The Chinese also charge that the United States is developing “some new-concept weapons” for its 21<sup>st</sup>-century space force, including kinetic, directed-energy, and non-antipersonnel weapons. Kinetic-energy weapons use ultra-high-speed warheads with extremely high kinetic energy such as electromagnetic cannons and intelligent intercepting bombs to collide with and destroy targets directly. Directed-energy weapons (laser, microwave, particle-beam, etc.) can be used not only to destroy various ground targets and flying targets such as aircraft, ballistic missiles, cruise missiles, satellites, and space stations, but also in both electronic warfare and photoelectronic warfare. Non-antipersonnel weapons include chemical energy-losing agents, low-energy-laser-blinding weapons, omnidirectional irradiation weapons, etc.

The Chinese agenda for space weaponry includes the following “new-concept” weapons, which will make outer space the fifth-dimension operational space after land, sea, air, and electromagnetism: laser weapons, ultra-high frequency weapons, ultrasonic wave weapons, stealth weapons, mirror-beam weapons, electromagnetic guns, plasma weapons, ecological weapons, logic weapons, and sonic weapons.

In early 2006, Chinese military strategists announced that “space weapons systems composed of hypersonic weapons will be the crack space troops with uniform tri-service land, sea, and air coordination and a widely increased scope of joint operations capability.” They will be united in informational completeness, and the enemy -- thus exposed to space weapons attack -- will be forced to protect friendly land, sea, and air forces against such attack. Hypersonic weapons will become “the dominant combat ordnance” in future high-tech battlefields, and aerospace integration will be the primary mode of operations in future high-tech warfare.

According to these experts, the interest of the major world nations in the development of hypersonic weapons will accelerate the development of this technology. It will thus generate new focal points and new circumstances for aerospace countermeasures. Whatever complications may arise in their technological development, “these types of weapons will be the nucleus of military competition in the early period of the 21<sup>st</sup> century.”

In addition, hypersonic aerospace aircraft represent “one of the key weapons to be employed for controlling space and vying for 21<sup>st</sup>-century space dominance.” These aircraft can: 1) ensure inexpensive, high-speed access to space; 2) counter satellites; 3) reconnoiter, monitor, and issue early warnings; 4) be used as space platforms for weapon launching; 5) be used as high-speed transport airplanes; and 6) be used as reserve command nodes in space during wartime.

### **Space Warfare**

Published by the Chinese Academy of Military Sciences, a recent book entitled Strategy defines the components of “military space strategy” as 1) the policies and principles for building military space forces; 2) the fundamental principles for employing military space forces; 3) the significance and role of space dominance; and 4) the characteristics, forms, and tactics of space war.

Since 1996, Chinese military scientists have defined space warfare as combat operations whose major goal is to seize and maintain space dominance, whose major combat arena is outer space, and whose major combat strength is military space forces.

The features of space warfare are said to include: dogfights between the space-based combat systems of both belligerents; intercepts of strategic ballistic missiles by space-based combat platforms; strikes by space weapons on Earth targets and Earth-based counterspace or space defense operations; and strikes from the land, sea, and air on enemy space launch platforms and command-and-control organs.

Since 2005, Chinese military scientists have contended that space warfare will become the core of future non-contact combat. The integrated space-based “metasystem” of combat platforms, weaponry, and C<sup>4</sup>ISR components will guide the various combat elements of the three armed services to launch long-distance precision attacks on ground, sea, air, and space targets.

Defensive campaigns will more often take offensive forms. Offenses and defenses will permeate, stimulate, and rely on each other; and the two will have a synergistic and systems-intimate relationship. Sea, air, and electromagnetic dominance will gradually subside and become subordinate to space dominance.

Because the space theater of war is in outer space and more than 120 km above the earth's surface, there are no restrictions concerning national boundaries and sovereign air space. The side possessing space dominance, say the Chinese, can therefore exercise complete freedom of action. The use of space-based weapons systems to strike endoatmospheric air, land, and sea targets demonstrates a unique superiority.

These unique, high-altitude advantages of space have strategic and decisive significance for the side exercising space dominance. If strike weapons are deployed in space, it will be possible to execute such offensive operations as satellite attack, missile intercept, and ground firepower support. It will be possible to guarantee the operational independence of friendly military space forces, and to translate these advantages into information, air, and sea dominance. Without space dominance, say the Chinese, one is actually putting oneself in the disadvantageous position of “being defeated first and then going to war.”

### **Space Information Warfare**

Both China and Russia have long contended that the “space-information continuum” constitutes the nucleus of the current “Revolution in Military Affairs” (RMA). The “Space Epoch” thus requires a colossal revision of military-strategic thought. “As informationized war advances,” say the Chinese, “space will truly become the new theater of war and thereby establish a new milestone in mankind’s history of warfare.”

Echoing their Russian counterparts, Chinese military scientists assert that information warfare (IW) missions are accomplished most effectively by using space-based assets. The Chinese delineate at least three reasons for the critical importance of space warfare to IW missions. First, space is the “commanding height” for future IW. Second, seizure of space control constitutes “the first combat operation in future IW.” With the continuing development of space weaponry and equipment, belligerents will conduct such new modes of space warfare as 1) space information warfare, 2) space electronic warfare, 3) space anti-satellite warfare, 4) space anti-missile warfare, and 5) space-to-Earth warfare.

The “core of space warfare” is thus the struggle for information dominance, so IW in space constitutes its main mode. The principal forms of space IW are: 1) conducting space electronic and space network warfare to inflict “soft” strikes on enemy space platforms, thereby disrupting and destroying their electronic equipment and computer systems; and 2) employing all types of anti-satellite weapons to inflict “hard” strikes on enemy platforms, thereby fundamentally destroying his space-information system.

Finally, the decisiveness of space dominance in future IW is clearly reflected in the ever-escalating preparations by world military powers to win future space wars. The pace of competition for the militarization of space has increased dramatically since Desert Storm, to include 1) the vigorous development and deployment of offensive and defensive weapons for space operations, 2) accelerated development of the space theater of war, 3) creation and organization of space combat troops, and 4) development of theories on space combat.

### **Space Electronic Warfare**

Owing to its strategic significance, say Chinese aerospace experts, space electronic warfare (EW) -- aimed at jamming, sabotaging, and destroying satellites -- has become the most important way to gain information dominance in future wars.

As the pivotal role of space-based synthetic aperture radar (SAR) becomes increasingly manifest, various countries are rushing to develop countermeasures. Active jamming -- said to be the most effective technique among asymmetrical countermeasures -- is divided into active suppressive and active deception jamming. Active suppressive jamming includes barrage, spot, and random pulse jamming. Active deception jamming includes repeater, responsive, and scattered wave jamming. Chinese algorithms demonstrate that, in order to achieve the ideal jamming effect against SAR, the jamming signal must be highly coherent with the radar echo -- a technique deemed feasible from a Chinese engineering perspective.

Chinese experts in space EW note that the counter-jamming capabilities of radar systems have been continuously advancing. The production of jamming signals with the same frequency and coverage as the radar signals has already been realized. However, the jamming signal created by countermeasures equipment is often not in the same direction as that of the target echo. Space adaptive jamming suppression technology can suppress the jamming signals in different directions compared to the direction of the signal echo.

Furthermore, the jamming suppression system can correspondingly provide adaptive variations following changes in the jamming direction. This technology has thus gained wide recognition, and has become an important technological measure in the development of radar counter-jamming capability.

The air-space battlefield is said to be the quintessential battlefield for information counterattack. EW satellites traveling in geostationary orbits or 300-1,000 kilometer orbits can conduct electronic reconnaissance and jamming in wide areas. EW aircraft in flight can execute high-intensity electronic killing of enemy long-range radar stations, command centers, and communications centers to paralyze their command capabilities and disable their firing systems. They can also directly launch anti-radiation missiles to totally destroy the enemy.

According to Chinese military scientists, the high-powered microwave (HPM) weapon has triggered "a new revolution in electronic warfare systems and technology." Not only is it compatible for creating integrated systems with radar for low-power detection, target tracking, and target jamming, but its power can also be rapidly increased for hard damage/destruction of targets and for inflicting damage on the electronic equipment of enemy targets. These weapons portend extremely wide applications extending to aeronautic, astronautic, warship, and battlefield weaponry.

The Chinese charge that rapid advances are being made in U.S. HPM and high-powered radio-frequency weapons development, and that they have already entered the applications stages. But designers of electronic systems can adopt many countermeasures for reducing HPM interference and damage, such as protective measures for the coupling and cable connections of systems and subsystems. Transmitters and receivers can be designed to be very sensitive to HPM; their duty ratios can be reduced; and redundant circuitry can be designed to further reduce HPM interference and damage.

## Anti-Satellite (ASAT) Warfare

Chinese military scientists assert that ASAT warfare is the most effective way to achieve space dominance. The principal forms are: 1) use aircraft, warplanes, and rockets to launch anti-satellite missiles to destroy enemy satellites; 2) install "space landmines" on the orbits of enemy satellites for destruction once they hit the landmines; and 3) use positioning weapons such as lasers, clusters of particles, and microwaves to attack enemy satellites. According to the Chinese, the United States has conducted successful experiments using laser weapons to destroy targeted satellites. Russia has also conducted tests using clusters of particles to disrupt and destroy the electronic equipment of satellites.

Based on the capabilities of reconnaissance satellites, Chinese aerospace scientists have compiled the following list of "space-information countermeasures":

- Aim for the satellite's effective payload by applying suppression interference to cause overload in the satellite's receiving system, data processing system, and memory;
- Target the satellite's remote control system by 1) establishing a space target monitoring system to acquire the satellite's technical parameters and character information, and 2) effectively detecting and analyzing the satellite's operational system and down-link remote signal;
- Attack the satellite's space-to-ground communication and command nodes to weaken the connection, link, mutual operation, and networking flexibility in order to degrade its operational effectiveness; and
- Use high-energy and kinetic weapons to blind [2006] or destroy [2007] the reconnaissance satellite [dates added by author].

While Chinese military experts applaud the "brilliant" performance of the U.S. Global Positioning System (GPS) in recent high-tech military operations, they continue to clarify its inevitable "Achilles' Heel." They have delineated three major weaknesses. First, defeat GPS at its source by exploiting the weakness of the low orbits of navigation satellites. This is accomplished by attacking with 1) anti-satellite satellites, 2) high-energy laser weapons, and 3) high-altitude weather-monitoring rockets. Second, defeat GPS in the middle by exploiting the scattered and exposed ground stations.

Finally, defeat GPS at the end by exploiting the fact that navigation signals are highly attenuated. After attenuation by natural causes, the ground signal is very weak and easy to jam. To prevent the enemy from locating and destroying the GPS jammers and to avoid personnel losses, the GPS jammer can be carried on a variety of platforms -- such as numerous aircraft and projectiles -- and thrown into a designated region for effective jamming.

The Chinese also allege a U.S. counterspace scenario against the Galileo system, which is said to consist of: 1) attacks by ground-based laser weapons, 2) attacks by airborne laser weapons, and 3) attacks by orbital weapons. (Orbital weapons capable of attacking enemy targets include laser and beam weapons.)

These experts also propose three measures that China and other countries could employ to counter the above-mentioned three "U.S." tactics:

- Passive Defense: Create a protective shield in space to disperse laser attacks
- Active Defense: Establish ground-based anti-satellite systems and orbital weapons platforms and deploy orbital weapons to attack and destroy hostile targets
- Develop strategic weapons to counter space weapons

Chinese aerospace scientists describe the “new-concept” orbital ballistic missile (orbital missile) as a multi-task, multi-role strike weapon capable of implementing random orbit transfer from Earth orbits. It can function as an intercontinental ballistic missile, an ASAT weapon, and an orbital bomber weapon. The missile is a cross between a ballistic missile and a satellite; it is a ballistic missile in a satellite orbit or a satellite with weapons capability. These missiles should be developed using the mutually interchangeable ground-based and space-based missiles, ground-ground missiles, and ASAT missiles.

To attack a target satellite, the orbital missile may ascend to the intercept point or it may enter a holding orbit around the Earth, and then encounter the target by changing the orbit. The advantages of the direct-ascent approach are that it is simple, its early-warning time is short, and its fuel-to-mass ratio is low. But this approach means that each launch has only one chance to attack.

In contrast, the approach of attacking from orbit has several chances in a single day. The possible operations include: 1) making the orbit of the missile coaxial with the orbit of the target satellite, and achieving interception by expanding the orbit with thrust impulse; 2) placing the missile in an Earth orbit lower than that of the target satellite, so that its apogee is almost coincident with the perigee of the target satellite’s orbit, and achieving interception by faster orbital speed; and 3) still placing the missile into an Earth orbit lower than that of the target, but intercepting it at a certain orbit position by a dynamic jump. But this method requires a more complex control technology and a higher fuel-to-mass ratio. The target satellite will also have a longer early-warning period.

### **Anti-Missile Warfare**

Anti-missile warfare refers primarily to the employment of an anti-missile system composed of space-, air-, and ground-based platforms to detect, identify, and track enemy ballistic missiles. Anti-missile space warfare also refers to the employment of positioning, kinetic, and other anti-missile weapons to intercept and destroy enemy missiles. The United States, say the Chinese, is currently developing a national missile defense (NMD) system “which is actually an anti-missile system anchored primarily in space warfare.”

Chinese aerospace scientists note that, compared with land-based, sea-based, and air-based antiballistic missile weapons, space-based antiballistic missile weapons have the following advantages: 1) they can intercept missiles on a global basis, 2) they can carry out highly efficient boost-phase interception, and 3) the virtually vacuum space is advantageous for improving an interceptor’s capabilities, such as reducing the attenuation of laser energy in the atmosphere. (Space-based antiballistic missile weapons, however, have the shortcoming that they need enormous amounts of resources to build.)

In analyzing the capabilities of the air- and space-based laser systems that underpin the ballistic missile boost-phase interception stage of the U.S. NMD system, Chinese scientists have also analyzed the feasibility of boost-phase evasive measures, to include the following four methods: 1) employ fast-burning rocket motor to shorten the duration of the boost-phase and hence the duration for a laser attack; 2) perform active rolling of the missile body during the boost phase so that the energy of the laser spot at a given location remains lower than the damage threshold; 3) apply high-reflectivity, low-conductivity, anti-laser coating on the missile surface to reduce the thermal coupling coefficient of the laser and keep the temperature rise rate in the safe region; and 4) other countermeasures such as smoke.

Chinese military strategists stress that the creation of ballistic missile defense systems and corresponding “penetrating measures” again prove the “shield-spear” dialectic, each of which will always generate the other and advance competitively. For today, the Chinese propose the following “penetrating measures”: 1) multiple warhead attack, 2) decoy penetration, 3) interruption and concealed penetrations, 4) enclosing balls (huge metallic membrane balloons), 5) trajectory change penetrations, 6) mobile launch, and 7) preemptive strike: “attack and destroy a certain part” of the NMD system.

Conducting a preemptive strike includes: 1) use “suicide satellites” (an orbital type of cruise satellite) or

laser weapons to destroy the early-warning satellite system and space-based infrared systems of the NMD system to paralyze them, and 2) launch preemptive attacks against each component of the NMD system. According to Russian scientists, say the Chinese, it is possible to use a mid-air nuclear explosion to destroy the “command, control, and communication management center” of the NMD system to both paralyze and attack its essential defensive capabilities.

Chinese strategists assert that for the long term, “we must intensify new and high-tech pre-research in this field, focus on aerospace threats and missile-attack and defense confrontations, and establish an all-dimensional and integrated missile defense system as soon as possible.”

### **“Integrated Air-and-Space Operations”**

“This revolution,” say the Chinese, “is first of all a revolution in concepts.” Like their Russian counterparts, Chinese military strategists have long been articulating a body of operational concepts for conducting integrated “air-and-space operations” (ASO).

The boundaries dividing military aviation and aerospace will gradually disappear to create a unified aviation and aerospace entity whose range extends from the surface of the Earth to outer space. The ground, air, and space already constitute an indivisible operational environment -- as demonstrated by the experience of recent wars. Conducting integrated ASO is now only a matter of perfecting the relevant technologies, and no longer a matter of their feasibility.

Owing to the technological breakthroughs in systems such as the Space Shuttle, aerospace aircraft, space weapons, and “new-concept” weapons, integrated ASO are becoming a new operational form of informationized warfare. For example, the Space Shuttle will become a completely new space weapon that combines aviation and spaceflight strikes, transportation, and information operations.

This kind of milestone weapon, say Chinese scientists, will create the conditions for multidimensional, stereoscopic operations conducted from space to Earth, from Earth to space, and from space to space -- thereby transforming integrated ASO from theoretical to actual. An integrated air-space maneuver platform can transport troops to any location on Earth in a few hours, while the attack weapons -- such as laser and beam weapons -- can execute precision strikes at the speed of several hundred thousand kilometers per second. This speed is hardly something that defensive weapons can withstand.

The principles behind integrated ASO consist in “attacking systems” and “attacking the whole.” Implementing a whole system-to-system confrontation is completely consistent with the Chinese concept of “whole operations” in informationized warfare (i.e., “integrated network-electronic warfare”). As space weapons continue to be developed, the speed at which targets can be acquired and attacked from outer space will undergo an Einsteinian change. Targets can be obliterated in an instant from distances of up to 10,000 kilometers, which makes the course of operations measurable in minutes or seconds. The concept of time in operations will thus move from the “time of combat vehicles” and “time of missiles” to the “time of the speed of light.”

Chinese military strategists predict that the emergence of integrated ASO will inevitably trigger a sea-change in military strategy. The expanding space battlefield will compel new theories such as space threat warfare, space mobility warfare, space blockade warfare, space attack warfare, and space defense warfare.

As “new-concept” weapons continue to be developed, the expanding space arsenal will generate such operations as laser attacks, microwave attacks, meteorological attacks, genetic attacks, virus attacks, and non-lethal attacks.

The first wave of war will develop from “firepower attack” and “electromagnetic attack” to “satellite paralysis.” Space will become, say the Chinese, “the first true battlefield.”

## **Organizational Imperatives**

Chinese military scientists note that, in order to implement space warfare, all organizational elements of the PLA must undergo both quantitative and qualitative changes. In general, the operational forces will now elevate technical elements, and operational systems will endure major adjustments.

First, the PLA will transform the current large unit formations. Operational units will become smaller, the number of combatants within the formations will be greatly reduced, and science and technology personnel within the PLA will increase dramatically.

Second, significant changes will occur in the composition of the PLA services and branches. In addition to eliminating some of the older military branches, a series of new technical and combat branches will be organized. These will include a “space force,” an “aviation and aerospace corps,” and “drone operations units.”

Third, operational command systems and logistics (and technical) support systems will also be substantially adjusted and transformed. The command organization for space forces will be given prominence in the command system in order to constantly strengthen command-and-control capabilities for the operational air and space forces.

## **Implications for the United States**

During the Cold War, the Soviets used the arms control process to gain time to overcome a perceived lag in emerging military technologies. And, like all good Marxist-Maoists, Chinese political leaders rarely say what they mean. But their PLA helmsmen do. Viewed as a military museum at the time of Desert Storm in 1991, the PLA has engineered a quantum leap into the “space club,” even imposing its own terms in the process. So the recent blinding and pulverizing of satellites can hardly be cryptic to anyone who reads their open exhortations to their own cadres.

“Whoever loses space loses the future,” they say -- and mean. Among other “new-concept” weapons openly earmarked for space dominance, laser technology appears to be the PLA’s current “holy of holies.” Based on their colossal progress to date, America should cease to be complacent about the sanctity of its orbital assets. Citing the Nikita Khrushchev of forty years ago, one PLA writer has warned that a new “Sword of Damocles” now dangles over the whole planet.

**Hearing on “China's Military Modernization and Its Impact on the United States and the Asia-Pacific”**

**A Congressional Perspective:  
Congressman Duncan Hunter (R-CA)  
March 29-30, 2007**

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Madam Chairman Carolyn Bartholomew and Vice Chairman Daniel Blumenthal, thank you for the opportunity to offer my perspective and concerns regarding the People Republic of China's (PRC) military modernization efforts and its impact on the United States, the Asia-Pacific region, and the world.

Since 2000, this Commission has informed Members of Congress with its policy analysis and legislative recommendations, which are aimed at protecting and advancing U.S. economic and security interests given the uncertainty of China's desire to increase its regional and global roles. On behalf of my fellow Members of Congress and my fellow Americans, I commend you for your hard work and dedicated service.

This hearing is timely. Earlier this year, China conducted a direct-ascent anti-satellite (ASAT) test—a provocative act signaling the communist country's indisputable capability to challenge the United States in space. As someone who has watched China's military build-up closely for over a decade, the timing of this test was unexpected, but the act itself was not surprising. In 2003 the Department of Defense predicted that “China is believed to be conducting research and development on a direct-ascent anti-satellite (ASAT) system that could be fielded in the 2005-2010 timeframe” in its annual report to Congress on Chinese military modernization. Four years later, the world witnessed a suspected intention evolve into a tested capability when the Chinese intercepted and destroyed one of its aging weather satellites.

A few weeks after the ASAT test, China announced that its 2007 defense budget would be increased by 17.8 percent over the previous year—increasing its military spending from \$35 billion in 2006 to \$45 billion in 2007. The Pentagon believes China's military spending is two to three times greater than the public budget numbers. China's continued double-digit defense increases demonstrate its resolve to transform and evolve its military into one that can challenge its regional neighbors first and then into a force that can conduct offensive operations globally. The October 2006 surfacing of a Chinese SONG-class diesel submarine near the USS Kittyhawk coupled with its ASAT test point to the likelihood that we are on the brink of seeing China's investments in modernizing its military pay off.

I came to Washington with the strong belief that the primary responsibility of Congress is to protect the American people. Today, my convictions are even stronger when considering 21<sup>st</sup> Century challenges to U.S. security. As we prosecute the Global War on Terrorism, much of the public's attention is focused on the Middle East and the on-going military operations in Iraq and Afghanistan. But it is the responsibility of leaders—from our military commanders on the front lines to policy makers in Washington—not to lose sight of the vast range of potential security challenges that may threaten our way of life.

The Pentagon's 2006 Quadrennial Defense Review Report (QDR) noted that China was at a strategic crossroads and it had the “greatest potential to compete militarily with the United States.” In 2006, the House Armed Services Committee (HASC) conducted its first-ever bipartisan Committee Defense Review (CDR) to complement the Pentagon's QDR. Unlike the QDR, our analysis and findings were based primarily on threats. However, the Committee's efforts also recognized China as a potential strategic challenge to the United States. Some of our key findings included:

- China's military capabilities are developing in a direction that could challenge U.S. Armed Forces;
- China's defense spending is rapidly growing and the military is undergoing a general downsizing to free up resources to accelerate modernization;
- The People's Liberation Army is an increasingly professional force equipped with the latest generation of advanced military hardware; and
- The PRC's air and naval forces have dramatically improved their capabilities to extend the battle space beyond Chinese territorial waters and increasingly focused on anti-access and area-denial capabilities.

While it remains uncertain if China will emerge as a responsible regional and global partner, China's military modernization ambitions and its increasing global aspirations to become a political, economic, and military power are beyond doubt. Therefore, the American people and our allies deserve the highest levels of diligence in understanding how China may evolve into a strategic challenge and threaten the security and economic prosperity of the United States, the Asia-Pacific region, and the world. Our constituents also deserve informed leaders who make the necessary and difficult decisions about what America requires to maintain the strength necessary to deter and prepare for these potential Chinese challenges.

As the former Chairman and Ranking Member of the House Armed Services Committee, I offer my concerns regarding China's military modernization efforts for your consideration:

#### **American dollars are paying for Chinese military modernization**

In the last ten years, I have watched China become the world's third largest trading power by devaluing its currency to achieve an export advantage over its trading partners. This action makes Chinese goods less expensive on the global market. As a result, China's trade surplus with the United States has grown to more than \$200 billion in 2006, a 25 percent increase from 2004. Despite a slight currency re-valuation in 2005, the Chinese Yuan remains undervalued by approximately 40 percent. By undervaluing its currency, China has given itself an unfair advantage to strengthen its manufacturing base at the expense of American manufacturers. This unacceptable practice, coupled with other tariffs and trade penalties, creates an uneven playing field and a one-way street for trade.

At the beginning of this Congress, I joined my colleague and good friend, U.S. Rep. Tim Ryan (OH) in reintroducing the *Fair Currency Act*, which would level the playing field for U.S. workers and reverse the one-way trade deals that are eroding the U.S. manufacturing base. If enacted into law, our proposal would define "exchange-rate manipulation" and permit American workers and manufacturers to seek relief against imports from countries that regulate the value of their currency, including China.

In the context of this hearing, I believe our legislation would also directly impact China's rapid economic growth, therefore indirectly reducing the pace and scope of China's military modernization by making it more difficult for the Chinese to use American greenbacks to purchase its ships, planes, and missiles.

#### **China's Preparations for War Over Taiwan**

China is likely to continue a regional campaign to achieve re-unification with Taiwan by shaping and influencing diplomatic, economic, and security initiatives. While economic integration with Taiwan is far along and likely to continue, it is also likely that China will continue to prevent the independence of Taiwan through coercive means and continue to expand its regional influence. This policy China's sustained military threat is evident by the deployment of over 800 short-range ballistic missiles to garrisons facing Taiwan. Additionally, China continues to modernize its offensive air capabilities, including modern tactical fighters and precision weaponry. China continues to improve its surface-to-air-missile system,

including the Russian variant, S-300 PMU2/SAM, which if placed on the coast opposite Taiwan would give China the capability to intercept aircraft operating over the island within a range of 200 kilometers.

While it is not likely that China will seek a military confrontation with the United States, third party events or actions could initiate a regional conflict. As such, the House Armed Services Committee's CDR determined that China is also continuing to modernize its military capabilities to deter and defeat any American forces that may be sent to protect Taiwan. It is safe to assume that China will continue to develop and modernize its cruise and intermediate-range ballistic missiles along with its integrated air defenses. It is also likely that China will continue to expand its conventional submarine forces while reportedly arming them with novel missiles, such as the Russian SS-N-Sizzler.

### **China's Ambitions to Modernize Its Strategic Forces**

China's ASAT test earlier this year shocked most of the world, getting the attention of all who have assets in space, including commercial entities. From a security perspective, China's ASAT test illustrated its progress in expanding its offensive capabilities beyond the traditional battlefield. For the United States, it revealed the potential vulnerability of our military and commercial space assets and marked the commencement of a new era of military competition in space. This is happening whether we like it or not unfortunately.

Protecting our war fighting capabilities and our economic interests compels this nation to take the necessary steps to ensure our forces cannot be targeted through an adversarial space strike. In a letter to the President, U.S. Rep. Terry Everett (AL) and I expressed these concerns and asked the Department of Defense to review its programs intended to preserve American space assets and to put in place new programs which "provide protection, redundancy, and reconstitution." We also recommended that the United States review all potential space cooperative activities with China in order to deny the Chinese any space technologies that could advance its military space ambitions.

China's modernization of its strategic forces is not limited to counter-space operations. China's strategic force ambitions also include building a robust arsenal of short-, medium- and long-range ballistic missiles and making large investments in submarine launched ballistic missiles, asymmetric capabilities such as cyber warfare, advanced submarines, and unmanned aerial vehicles. Significant strategic developments that have caught my attention include China's successful development of solid-fueled and road-mobile DF-31 and DF-31A, intercontinental ballistic missiles (ICBMs) which could target the United States, and the reported completion of five domestically-produced nuclear submarines. There are also some independent military experts who believe the Chinese may be equipping their silo-based ICBM's with multiple warheads.

Over the years, I have spoken to U.S. military commanders and administration officials regarding the quality and quantity of China's nuclear arsenal and nuclear ambitions. Although there is some uncertainty, there is consensus that China is actively seeking to expand its strategic capabilities, including participating in counterintelligence activities to acquire advanced technologies. From these accounts, it is also clear that China's strategic posture should be calculated in the U.S. strategic equation.

### **China's Future Power Projection Capabilities**

In addition to seeking capabilities to dominate regionally, it is evident that China seeks capabilities to project military power into the Pacific and well beyond the South China Sea. In our defense review, the Armed Services Committee concluded that the Chinese air force has an interest in acquiring an aerial fueling and airborne early warning (AEW) capabilities, turning some older bombers into tankers and modifying A-50/IL-76 transport aircraft to perform the AEW mission. The resulting capabilities would provide greater reach and command and control functions for the Chinese military. In terms of Chinese naval power, we found that the Chinese are transforming from a coastal navy to a deep-water fleet centered

on anti-access and area-denial vessels, such as the four Sovremenny-class destroyers equipped with the advanced SS-N-22 Sunburn ship-to-ship missiles; modern submarines, including twelve modern KILo-class diesel submarines from Russia and its five domestically produced nuclear submarines; and advanced weapons systems, such as long-range anti-ship cruise missiles and naval mines.

### **China's competition for regional and global influence**

Lastly, China's rapid economic growth and military modernization ambitions may reflect a nation seeking greater influence not only in the Asia-Pacific region but globally. Although China's global military influence is limited, focused primarily on participation in peacekeeping operations and arms sales, its diplomatic and economic roles are expanding. If you look around the world, you will see a Chinese presence in different regions, including Africa and Latin America. You will also find China increasing its demand for capital, technology, and natural resources beyond its regional neighbors. Although not widely accepted today, I believe that it is probable that China's expanded economic interests around the world may shift its justification for its military modernization from defending its sovereignty to building a military capable of defending its global interests. This is a possibility I recommend that this Commission watch closely.

### **Closing**

In closing, China's rapid economic growth, double-digit defense spending, investments in military modernization with a focus on power projection and its strategic forces, and increasing presence around the world require a policy employed by one of America's great leaders, Ronald Reagan – "Trust, but verify." America and its allies cannot afford to wait on the sidelines as China continues its upward trajectory. We must devise and implement a strategy to counter China's ambitions now so we are not unprepared for the future.